October-November 1957

The New York State Conservationist

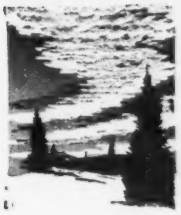
State of New York Conservation Department

Autumn Woodland

The New York State

Conservationist

OCTOBER-NOVEMBER, 1957



The Hunter

A long time ago a man stood on a cliff-side trail. The afternoon sun set off his massive bulk against the gloom of the cave at his back. He turned his head at a low, child's cry; saw the baby searching among the clean-picked bones scattered around the smoldering fire. A woman reached out, stirred the embers to brief flame; peered at the man. There were no words; hunger spoke for itself.

He faced again toward the valley, his head thrust forward to check the scent of air currents beginning to drift up from the forest below. There it was—the smell of game! His fingers tightened around the smooth, worn grip of his club. His shoulders hunched forward. Every sense alert, he worked his hunter's way slowly, carefully down toward the valley; toward the kill he must make if he and his family were to survive.

Well, survive he did—fortunately for us—and surviving too, though diluted by the ages, are the instincts of the hunter, the quickened pulse at the sound of geese in the sky, the whir of a grouse taking flight, the flash of a startled deer. These magically close the gap of time. And so, we pray, it will always remain.

What does not remain is the absolute necessity to kill. Unlike our caveman ancestor, we won't cry in hunger; finally starve if we fail to bring down our prey. And that, for most of us, is fortunate indeed. Yes, for all of us. It takes the pressure off. It permits us to enjoy as a sport that which once was a matter of life or death. It gives us time these hunting days to refresh with Autumn color the canvas of our memory, to see the drift of falling leaves, to rest awhile against a sunny, hilltop wall and watch the shadows in the valley.

And maybe we'll even bring something home. But it doesn't really matter so long as there is game in the field and some place to hunt. —EDITOR

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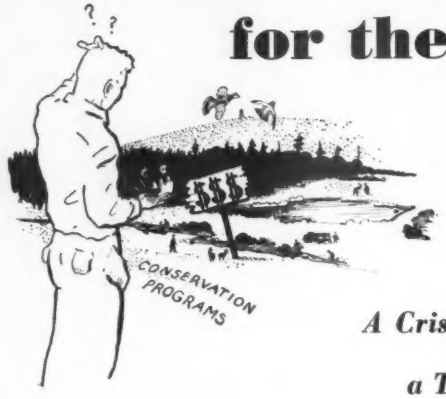
Fish and Game for the Future



A Crisis and a Time for Decision

Part II

IN Part I of this article appearing in the August-September, 1957 CONSERVATIONIST, it was pointed out that present income to the Conservation Fund was inadequate at least in the amount of $648,000 to carry forward the current fish and game program. Moreover, needed expansion of existing programs and the undertaking of desirable new programs were clearly impossible with present income, unless corresponding reductions were made in existing programs.

Two possible courses of action were discussed: (1) Reduce existing programs to permit financing within the income received from present license fees. (2) Provide the funds required for a fish and game program to meet today's needs and to help insure future hunting and fishing opportunity. The first alternative is, to our mind, a turning backward; the second, a realistic—if painful—necessity. But the choice must be made and we believe that the public—particularly the sportsmen—should share in the responsibility for making the decision.

To help in this decision, this article discusses a *suggested* increase in fees for hunting, fishing and trapping licenses, estimated additional income from such license increases and how the additional funds might be used for a strengthened and expanded fish and game program. Information is also presented on a number of questions which it is felt interested persons will ask about this important problem.

How long have present license fees been in effect?

The present license fees became effective January 1, 1949.

Why is income from present license fees inadequate?

The critical financial condition of the fish and game program is due in part to expansion of programs and facilities to meet the continually increasing demands on our fish and game resources but to a large extent also to steadily increasing costs of wages, material and equipment. It takes $1.58 today to secure what one dollar bought in 1949.

Is New York the only state which has this financial problem?

A survey made last year showed that the fish and game departments of thirty-one states were requesting increased license fees. And, as of July 1, 1957, twelve states had passed laws raising hunting or fishing license fees.

How do our present license fees compare with other states?

RESIDENT LICENSE FEES
(Table 1)

Type of License	*New York State*	*National Average (1955)*	*Average 12 other N.E.States (1956)*
Hunting	$2.25	$2.77	$3.13
Fishing	2.25	2.40	3.00
Combined Hunting & Fishing	3.75	4.44	4.68
Trapping	2.25	*	4.98
Big Game	2.25	3.62	5.12

* data incomplete

Note: Some states do not require a separate big game license, but some require both a big game and hunting license to hunt big game.

It is apparent that New York, which has the largest population and ranks second in number of licensed hunters and sixth in number of licensed fishermen in the Nation, has license fees which are lower than the national average and significantly less than the average for the other states in the Northeastern region.

How much should license fees be increased?

From analyses of the additional income required to support today's fish and game program and to provide for known needs of the next few years, it has been suggested that the fee for hunting, fishing, trapping and big game licenses be increased by $1 each and that the combination hunting and fishing license continue to be offered at a saving of 75 cents over the combined cost of these licenses if purchased separately.

There are, of course, many possible ways that the license fees might be changed. The suggested increases, however, appear to have the merit of spreading the additional costs as equitably as possible among the primary users of our fish and game resources.

SUGGESTED INCREASE IN RESIDENT LICENSE FEES
(Table 2)

Type of License	*Anticipated Sales*	*Present Fee*	*Suggested Fee*	*Anticipated New Income*
Hunting	263,000	$2.25	$3.25	$263,000
Fishing	483,000	2.25	3.25	483,000
Hunting & Fishing	270,000	3.75	5.75	540,000
Big Game	432,000	2.25	3.25	432,000
Trapping	12,000	2.25	3.25	12,000
	Total anticipated additional income			$1,730,000

How much additional income would these license fee increases produce?

If license sales continued at the 1956 rate, the higher license fees would produce about $1,730,000 additional income annually, (see Table 2). It is not anticipated that license sales would decrease materially because of fee increase but should that occur, initially, it might be a year or two before this estimate was realized.

How does this increased income compare with that requested by other states?

We do not have information from all the states requesting increased license fees. However, the Pennsylvania Fish Commission has reported $1,855,000 additional income annually is required to carry forward just the fisheries program in that state; the Wisconsin Conservation Commission has indicated that it requires $1,851,000 additional annual income to maintain present program and to provide for some expansion; and the California Department of Fish and Game has reported that it requires $2,000,000 additional annual income simply to maintain present services.

How would the increased income be used?

Generally, to provide a strengthened and expanded fish and game program, which will meet the major known needs of today and of the immediate future. Specifically, it is proposed that the increased income be used as follows:

To continue present program	$700,000
Acquisition of lands for public hunting and fishing	200,000
Development of public hunting and fishing on game management areas and State reforestation areas	200,000
Stream improvement and development of lake access sites	100,000
Modernizing and strengthening law enforcement work	150,000
Providing public hunting and fishing on private lands through Fish and Wildlife Management Act	150,000
Providing greater field services through reorganization	75,000
Operating reserve	155,000
Total	$1,730,000

Each item listed here was discussed in Part I of this article in the August-September, 1957 CONSERVATIONIST. It should be noted that, with the exception of the $700,000 required to maintain present program, the expenditures proposed here represent additions to any funds presently appropriated for these purposes.

How long before another increase in license fees would be needed?

Without knowledge of the economic trend of the future, it is impossible to give a definite answer to this question. It is felt, however, that the proposed fees should be adequate for the years immediately ahead.

What are present non-resident fees?

NON-RESIDENT LICENSE FEES

Type of License	*Amount of Fee*
Hunting	$10.75
Fishing	5.50
3-day Fishing	2.75
Big Game	10.00*
Archery	10.00
Trapping	25.00

*A non-resident must have a non-resident hunting license in order to purchase a big game license.

Why isn't an increase in non-resident fees suggested?

We are not ruling out this possibility, but at the present time New York's non-resident fees are comparable to the average of those charged by other states. Moreover, the non-resident license fees have been increased since the last increase in resident fees by discontinuance of the non-resident combined hunting and fishing license and by requiring a non-resident to have a hunting license before he can purchase a big game license. It was felt, therefore, that presently there is more justification for increasing resident fees than for charging a larger fee for the approximately 19,000 hunters, 32,000 fishermen, 16,000 3-day fishermen, 11,500 big game hunters, 1,900 archers and 18 trappers who purchase non-resident or alien licenses each year.

Would the increased license fees pose an unreasonable or burdensome charge for the average hunter and fisherman?

The Crossley Survey of hunting and fishing in New York in 1955 showed that about *four cents* of each dollar spent on hunting and *one cent* of each dollar spent on fishing were paid for licenses. With the increased license fees, these costs would be approximately *five cents* of the hunting dollar and *a cent and a half* of the fishing dollar. It is obvious, despite a fee increase, that the hunting and fishing license dollar would continue to be the best bargain in the recreation field.

Would the increased license fees guarantee the individual hunter and fisherman more fish and game in the bag?

Not necessarily. With the increasing number of hunters and fishermen, more fish and game must be produced to maintain present success ratios. The fish and game program is, of course, designed to produce more fish and game wherever it is feasible to do so.

What would the increased income accomplish?

First, it will permit continuance of the present fish and game program.

Second, it will make it possible to tackle effectively what we believe is the number one problem today; namely, the alarming decrease in hunting and fishing opportunity. Posting and the development of land and water for other purposes are continually shrinking the areas available to the public for hunting and fishing. This trend must be stopped and reversed if we hope to provide hunting and fishing for all of our citizens who wish to enjoy these fine sports. All of the proposed additional expenditures are directed toward meeting this important problem.

If license fees are not increased, how will it affect the fish and game program?

The budget for the present year permitted no expansion of activities, regardless of need, and required deferment of some maintenance, repair and development activities. If additional income is not available by October 1, 1958, marked reductions will have to be made in the fish, game, and law enforcement programs. Without such additional funds, even more drastic cutbacks in all major programs will be necessary in 1959.

In summary, if additional income is not available, our fish and game program by 1959 will be totally inadequate to meet the day to day needs and our fish and game resources will be placed in a position where it will be most difficult, if not impossible, to make up for lost time and opportunity.

—W. M. LAWRENCE,
Director, Division of Fish & Game

Archers line up for score cards at start

Gathered to hear the rules of the shoot

An open field target on one of the courses

The 1957 winners (left to right): Jay Peake, Charleroi, Pa., men's instinctive champion and tournament winner; John Gabriel, Jr., Olean, N.Y., junior boys' instinctive division; James Palmer, Dansville, N.Y., men's hunter division; Robert Rhode, Minneapolis, Minn., men's free-style. Ralph Helzerman, Jr., Tecumseh, Mich., intermediate boys' free-style; Esther Thompson, New Castle, Pa., women's hunter; Merle Weimer, Marlinton, Va., women's instinctive; Carol Hastic, Passaic, N.J., girls' instinctive; Janet Leder, Cincinnati, Ohio, girls' free-style, Ann Marston, Wyandotte, Mich., women's free-style

Ann Marston, women's free style champion, combines beauty with ability

Archers at tournament's close shoot traditional farewell arrows

Studies in

National Field Archery

New York State Plays Host to the National Field Archery Championships–

ON the afternoon of August 14, with the shooting of traditional "farewell" arrows, the largest championship tournament in the history of field archery drew to a close. Jointly sponsored by the Watkins Glen Chamber of Commerce, the New York State Conservation Department and the New York Field Archery Association, the 12th Annual Field Archery Tournament was held at the Connecticut Hill Game Management Area south of Ithaca on nine field courses built by the Conservation Department. Headquarters for the tournament was located at Watkins Glen, about fifteen miles from the courses. It was here that the parade, shooting demonstrations by champions, and other non-competitive tournament activities took place.

The tournament registration of 1,090 archers representing 33 states and Canada demonstrates the wide and steadily increasing popularity of the sport. Many of the contestants, with their families, camped at nearby State Park campsites where they were ably provided for by the State Parks Division personnel.

On hand at Connecticut Hill were uniformed Game Protectors and Forest Rangers to direct traffic and answer many questions asked by the visitors.

State Police Officers helped direct traffic flow into and away from the area at rush hours and did a very efficient job. In some cases they were almost too efficient. At the tournament's first morning, a car stopped beside a Game Protector who was directing parking at the headquarters on Connecticut Hill and the driver, with an anxious look at the swarm of people with strung bows in their hands, demanded to know what was going on. A salesman, he had made an early start for Schenectady when he was caught in a line of traffic that was being directed into a side road by the State Police. Here he was, but where was he? With apologies and an explanation he was sent on his way.

The story of the tournament is best told by the accompanying pictures. New world's records were set in almost every shooting division and age group. The weather was ideal and the courses, designed and constructed by the Department's area caretaker Bob Cameron, were excellent.

Outstanding was the shooting of an 18-

A woods shot, kneeling and standing

A group of the better-looking contestants

Shooting in the deep shade of red pines

good form

Jay Peake, Pennsylvania archer, in characteristic, free and easy stance. He won the championship; shattered all-time records

Tournament

Biggest and Best Thus Far

year-old bridegroom from Charleroi, Pennsylvania, Jay Peake, who won the men's instinctive championship and the tournament championship. This is particularly impressive when it is realized that for the tournament championship he had to out shoot the best free-style archers (using bow sights) in the country. A sight on a bow usually increases the accuracy of the shooter and automatically results in a higher score. Until this year it was assumed that the tournament championship would always be won by a sight shooter.

The success of such a tournament is the result of the hard work of many people and archers thank them all for their combined efforts. It was a credit to all concerned.

—H. Wayne Trimm

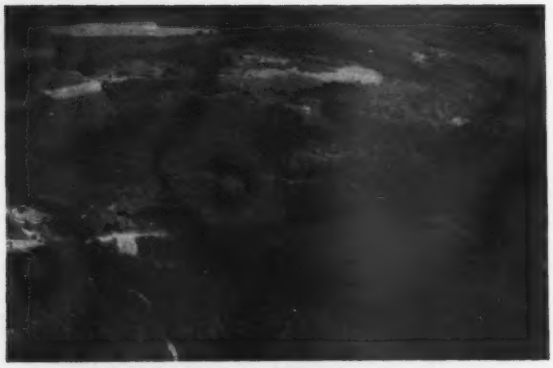
Group checking their hits, tallying scores

Wildlife and the

There's a New Day Coming for an

Elm Creek — a destructive stream in an eroded bed

Land treatment is the real answer to watershed problems



This water retention dam impounds a 25-acre pond

Battle Brook, a pastured and badly eroded stream

A wooded section of Little Conewango

THE Conewango is a lazy creek meandering through one of the more picturesque valleys of Cattaraugus and Chautauqua counties; joining the Allegany River near Warren, Pa. It's had a varied past, but in late years some of its more pleasant associations have been with reasonably good fishing for muskalonge and trout, fair waterfowl hunting and, in the uplands, good deer and grouse hunting. There have been unpleasant associations too, especially to the residents of the valley, and adjacent upland. They have been plagued with floods, eroded streams, unfarmable wetlands and drought-stricken hill lands. Many have suffered extensive property damage.

The watershed of the Conewango and its many tributaries encompasses some 190,000 acres. Here, among others, are the communities of Randolph, Kennedy, Ellington, Cherry Creek, South Dayton, New Albion and Leon. The watershed is characterized by a broad, flat plain through which the streams flow sluggishly, surrounded by steep hills from which the streams flow rapidly to the plain below. There are 40,000 acres in the plain area of which 27,500 acres need protection from floods and require some degree of better drainage. Included are 3,700 acres of valuable muck land, the majority of which has not been developed because of unstable water levels.

In the early 1900's an extensive drainage system was initiated with a main channel (known as the State Drainage Ditch) which shortcircuited the oxbows of the main creek as it flows through the valley. The ditch, with its tributary laterals, speeded the flow of water and opened many new acres to farming. Unfortunately, as farming in the valley prospered, the intensified farming in the uplands disregarded good agricultural practices and the soil losses, through run off, soon filled the creek and ditch channels with silt and gravel. This, coupled with the rapid run off from the hills has caused increasingly disastrous floods. Periodically each year, one can look down on the valley from the surrounding hills and see what resembles a vast lake.

It is estimated that 60 per cent of the water that falls in the watershed, runs off. In fact it runs off so rapidly that a gauging station at Waterboro may register a variance of 150 times from the low

Conewango Watershed

Old Valley; Its People and Its Fish and Game

to high stages of the creek and this may take place during a relatively short interval, especially during severe Summer storms. Because of this fast and extensive run off the uplands are beset with near drought conditions during a major part of the growing season. The streams are badly eroded and their silt and gravel loads are deposited in broad, unsightly and unproductive deltas where the streams enter the valley.

Perhaps wildlife has prospered since the efficiency of the drainage system was impaired. No doubt certain aquatic species, as waterfowl and the wetlands furbearers, have benefited with the ever increasing acreage of land abandoned because of the unstable water conditions. The trapping of furbearers does play a part in the local economy and the valley is considered to be one of the more important waterfowl gunning areas in south western New York. Nevertheless, flooding and unstable water levels have also had adverse effects on wildlife populations. Surveys show that waterfowl nesting is not substantial in the valley. Perhaps the birds are wary of where and when the water will be during their nesting season. Ground nesting birds and animals such as the pheasant and cottontail are no doubt jeopardized by the very unstable water conditions. In the uplands the grouse and the deer are the principal game species and they have fared well with the abandonment of farmlands caused by loss of productive soils.

There seems to be every indication that at least one fishery—the muskalonge—has benefited. The Conewango is one of the few creeks that supports a musky fishery in New York and at least a part of this is credited to the high water level maintained in the creek by channel obstructions. In the tributaries a good trout fishery exists but eroding streams, periodic high and low water levels are certainly not conducive to the best management of this fishery.

Now, let's look to the future. It seems much brighter for agricultural interests, wildlife values and the general prosperity of the people living in this area.

The more progressive residents have long struggled with the problem. Some have demanded a complete drainage system but with little thought that drainage could only be a temporary solution unless the upstream causes of flooding are alleviated. Others, overlooking all other interests, have advocated that most of the area be developed for wildlife. There have even been advocates of using the valley as part of a flood control system that would take a part of the Allegany River run off, reverse it and discharge it into Lake Erie, to alleviate the disastrous flood conditions caused by the Allegany in New York State and Pennsylvania. Each plan has had certain merits but none has been a real solution.

In 1954 the first seemingly real possibility came about when Congress passed Public Law 566 (The Small Watersheds Act) which authorized Federal assistance in watershed protection. The Conewango Valley Flood Control Association was formed with representation throughout the watershed. The Soil Conservation Districts in Cattaraugus and Chautauqua counties became an integral part of the Association and planning began with many public meetings to acquaint all interested landowners with the problems and how they might be coped with. Various State and Federal agencies expressed an interest in the proposed developments and their effects. For instance, where drainage was considered, men of the River Basins Studies of the Fish and Wildlife Service, in co-operation with technicians from the New York State Conservation Department, surveyed the area critically in an attempt to determine whether certain valuable wetlands with good wildlife potentials, but poor agricultural possibilities, could be saved or improved by co-ordinated planning. The fisheries aspects were examined to see how and to what degree any valuable fisheries might be affected.

It might be well to mention here an interesting and important factor that has arisen which demonstrates the many types of conservation management principles that can be involved in land use planning.

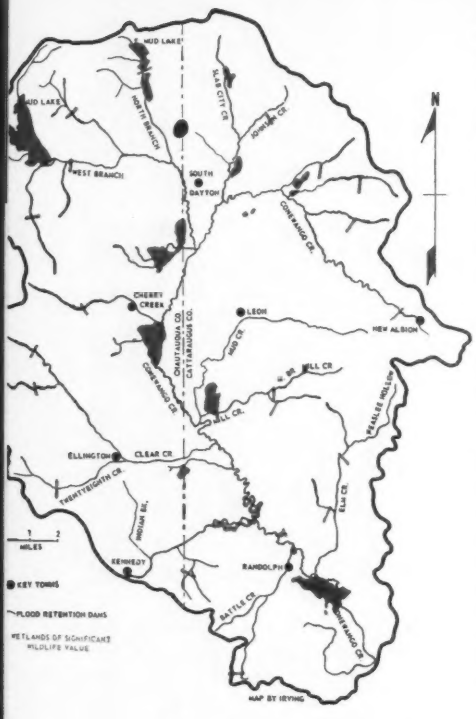
Davis brook, near Waterboro, is a relatively small brook, probably little over two miles in length, with several small tributaries. It is one of many of its type in the watershed. This brook descends rather steep slopes and enters the Conewango at a constricted point in its course, carrying with it, during every heavy rain, a tremendous load of gravel. When it reaches the Conewango it deposits the greater proportion of its gravel load and, in turn, the current of the Conewango continues to carry a part of the load further downstream. Over the years this has built up a gravel bar or "plug" in this main Conewango Creek that stretches a half mile to a mile below the junction of Davis brook. It is this gravel bar or "plug" that has served to raise the level of Conewango Creek, holding flood waters back and defeating the purpose of the original drainage system.

The raising of the water level by this bar has no doubt been instrumental in developing the musky fishery of the Conewango. In fact, when an attempt was made some years ago to dredge the gravel bar, with a subsequent lowering of the water level, the musky fishery was adversely affected according to local fishermen.

This small brook is a most important consideration. If flood control and certain necessary drainage is to be accomplished, the bar must be removed. It may be possible to establish man-made water holding structures in Conewango Creek above the entry of the main drainage ditch and these may serve to limit damage to the musky fishery—at least to a considerable degree—by maintaining higher water levels in at least part of the creek. Basicly though Davis brook, through sound upstream management, must have its gravel load reduced or no amount of work on the drainage and flood control will be effective for long. This particular brook happens to be an example of a key situation like a key log in a log jam but all of the other tributaries of the Conewango should be treated in the same manner to cut down erosion and deposition of silt and gravel in the plain below if the main objective for the watershed is to be reached.

The Watershed Association and the Soil Conservation Districts have been furnished with maps and data (see illus.) concerning the more important fish and wildlife aspects, especially as concerns wetlands, and these are being taken into consideration in the planning.

The overall plan for the watershed is not yet complete and survey crews are still securing the necessary data. It is significant to note that the watershed plan is divided into sub-watershed sections in order that progress may be made on some of the smaller but important tributary problem areas. Upstream flood retention dams are contemplated for certain of the main tributaries and some



The Conewango Watershed

twenty have been proposed with tentative sites already selected. The design for these reservoirs proposes a permanent pool that should serve well for fish and wildlife management and general recreational purposes. The flood storage capacity, to be released at an even flow, will certainly lessen the destructive scouring of stream beds by controlling the run off and yet not be retained in the reservoir often enough or long enough to seriously damage fish and wildlife values. Certain of these reservoirs may have silt and debris basins to slow down sedimentation of the main reservoir and these, properly managed, should fit into the wildlife plan. At the present time it would seem that these reservoirs, under proper management, will more than compensate in fish and wildlife values for any destructive effects that necessary drainage might have in the valley proper.

It bears repeating that alleviation of the flooding and drainage problems in the valley can only be accomplished if the upper reaches of the tributaries and surrounding agricultural lands are treated with good land management practises. Such treatment has of course been in progress since the establishment of the Soil Conservation Districts in these counties and many farms, now under co-operative agreements, have effected contour farming plans, planting of trees and shrubs on idle lands and in hedge rows, fencing of woodlots and streams against grazing, established farm ponds and small marshes as water catchments and many other good land conservation practices. It is anticipated that such practices will be speeded up considerably as the watershed plan begins to take effect.

On a recent trip into the watershed with Homer Stennett, Work Unit Conservationist of the Cattaraugus County Soil Conservation District, and Richard Hyde, District Game Manager for the Conservation Department, plus several members of the Watershed Association, it was most revealing to see the effects of certain land management practices that can be carried out at a minimum of cost. Two things in particular are worth special mention. First, the effects of grazing along streams is a most important factor in stream management. Where cattle are allowed to enter the stream course at random, damaging banks and vegetation—streams suffer and floods are in the making. Where cattle are fenced out, except for planned watering areas, vegetation quickly takes over the control of erosion and stream flow. In most cases, the increased vegetative cover along these streams is having favorable effects on fish and wildlife populations. It is obvious, too, that fencing is one of the least costly methods of stream management where grazing is an important agricultural pursuit. Secondly, to speed up stream stabilization where that is especially difficult, the planting of willows or other shrubs that have the root structure to hold stream banks is paying substantial dividends. There are many examples of washed out cribbing, concrete abutments and rip-rap, established at considerable cost, where similar areas with natural vegetative cover are holding. Minimum maintenance of these "natural" stabilizers, such as the occasional removal of an obstruction, seems to serve the purpose for permanent stream control in the majority of cases. The foregoing examples are certainly not spectacular but they are reasonable in cost because most of the job can be handed to Mother Nature.

Although detailed plans for the watershed are not complete, the interest exhibited by the many landowners in the watershed, the officers and directors of the Association and the governmental agencies working with them is an indication that an action program will soon be ready and operative.

This year, two additional and important legislative acts became law that should serve to further implement this work. First, the County Law was amended to provide for the establishment of county small watershed protection districts. This law sets forth the procedure for initiation and construction of projects in co-operation with the Federal government (Public Law 566). The new county law brings the several State departments concerned with soil and water conservation into the group of co-operating agencies and provides for reimbursement, from State funds, of up to one half the local expenditure for lands, easements, and rights-of-way for construction of flood prevention projects. There is, of necessity, a limit of $20,000 for any one project.

Secondly, the Conservation Law was amended (effective April 1, 1958) to provide for the adoption of fish and wildlife management practices and the furnishing of benefits and services to owners and lessees of private lands and waters who agree to carry out such practices. Even though the details for implementing this particular legislation are still in the formative stages, the benefits and services, afforded under this act will be available to landowners associated with watershed programs. Certainly the fish and wildlife values of the Conewango watershed may very well be adapted to this type of program. In fact, the Conservation Department's "48-D" program (Development of Wildlife Habitat on State and Private Lands) has, for the past several years, provided benefits for wildlife in the form of fencing of wildlife areas against grazing (including some stream banks), the construction of small marshes and pot holes as water catchments and the planting of substantial quantities of trees and shrubs, the effects of which have already shown considerable promise in assisting in the overall watershed management objectives in this area.

The Conservation Department's Forest Practices Act, initiated several years ago, is now well established and the services are available to all woodland owners, many of whom have forested lands within the watershed area. Certainly this program can be increasingly beneficial in the future management of the Conewango and the results will be beneficial to both agriculture and fish and wildlife resources.

The productiveness of the land, whether the crop is fish and wildlife, agricultural crops, forests, or adequate and controlled water supplies is dependent on good soil and water conservation. The plans for Conewango Creek and its tributaries should forecast a more pleasant and productive place to live, work and play —for all concerned.

—Earl A. Westervelt

Findley Lake

General

Lake was formed by damming outlet of two small ponds
Lake is generally weedy
Boats are available

Location

Southwestern Chautauqua County

Physical features

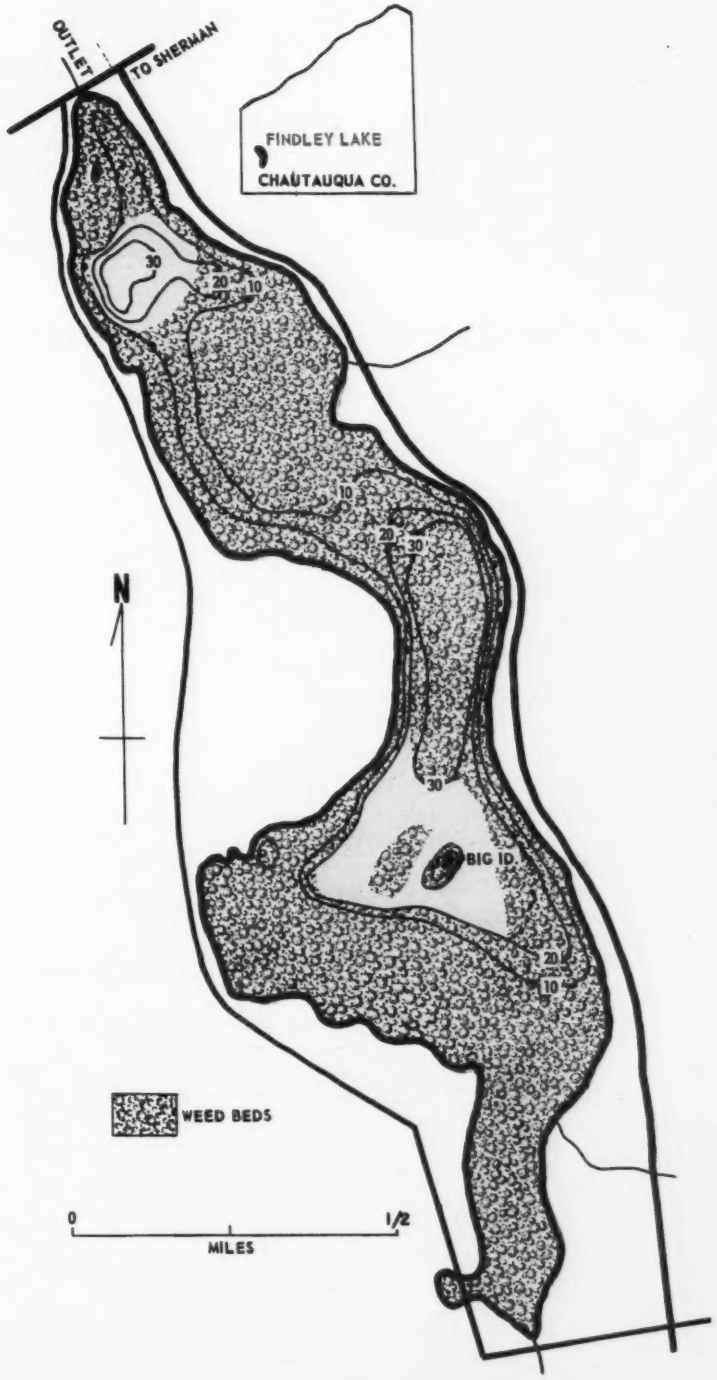
Area: 275.2 acres
Elevation: 1,421 feet
Maximum Depth: 36 feet
Bottom: Muck, with small areas of gravel

Chemical characteristics

Water: Soft
Oxygen: Poor below 15 feet
pH: Alkaline

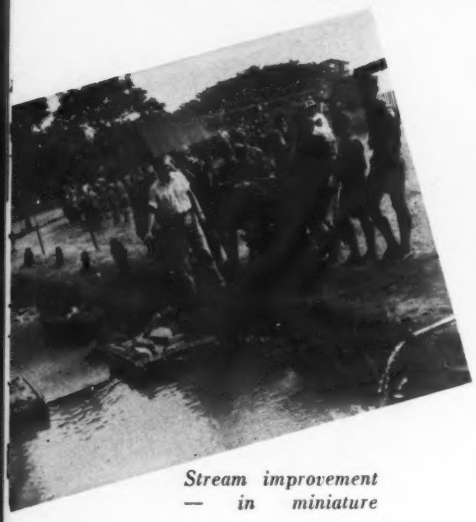
Fish present

Muskalonge
Largemouth bass
Smallmouth bass
Walleye
Yellow perch
Calico bass
Common sunfish
Bluegill sunfish
Rock bass
Common bullhead
Common sucker
Several species of minnows



—William G. Bentley,
Aquatic Biologist,
Western Fisheries District

Boy Scouts of America Were Hosts and Participants This Year at Historic



Stream improvement — in miniature

Pheasant nest in good cover

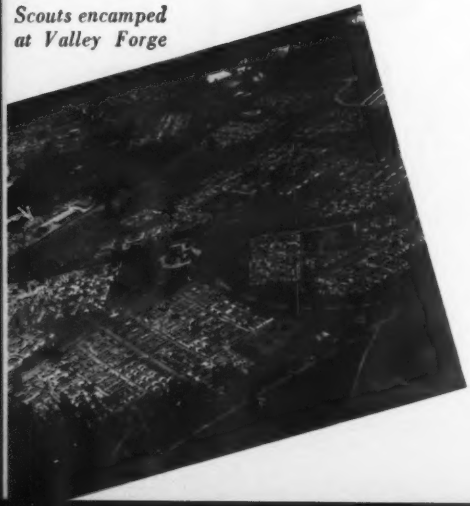
The National Boy Scout

GEORGE WASHINGTON made history at Valley Forge, Pennsylvania in 1777. Conservation history was made in exactly the same place in 1957. As the site of the Fourth National Scout Jamboree, Valley Forge in July was the scene of the biggest conservation education effort ever made and a program that was probably the biggest co-operative conservation project ever held.

Twenty-four state, Federal and independent conservation agencies joined forces to present a conservation program for more than 53,000 Scouts and leaders from all forty-eight states and territories of the United States and representatives from several other countries as well. The program was unique in conservation history in two respects: Methods of presentation and number of participants. But let's start at the beginning.

Magic in conservation keynotes the program

Scouts encamped at Valley Forge



Why Conservation Education?

The primary purposes of this gigantic conservation education effort were: (a) To attract and stimulate interest in conservation and to point up its importance in the citizenship training program of the Boy Scouts; (b) to show through do-it-yourself demonstrations, some of the conservation problems facing this country today with their solutions; and (c) to show every Scout and leader how he could go home from the Jamboree and spread the word of the need for conservation among a far larger audience of Scouts and the general public.

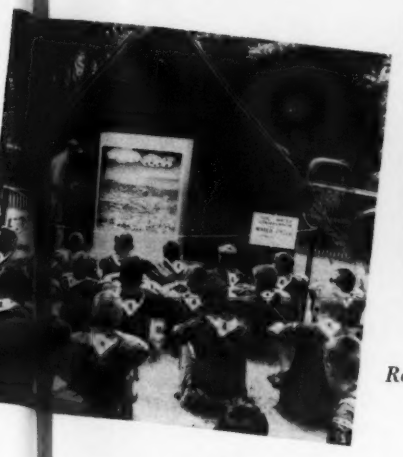
Magic In Conservation

Keynoting this Jamboree program feature was a big tent magic show, complete with midway, live magicians and a general carnival atmosphere. As Scouts came to the conservation area, they entered a huge tent to see the "Great Conservo" and his baffling, amazing, and mystifying performance. The Great Conservo is the lead character in a specially produced film made by the U. S. Departments of Agriculture and the Interior for a premiere showing at Valley Forge. Through the medium of magic stunts, plus scenes of conservation in action across the Nation, Scouts were shown the importance of soil, water, mineral, grass, forest, fish and game resources in the life and economy of America, and came to realize the inter-relationships that exist among these resources.

The Great Conservo did the usual tricks of prestidigitation—from pulling rabbits (cottontails) from his topper, to making trees grow right before one's very eyes. But in between his tricks, the magic involved in keeping the land productive—using and managing all the resources intelligently—was explained and demonstrated with film taken all over this great country. While the story line running through the film played up "magic," the film emphasized that conservation is everybody's job.

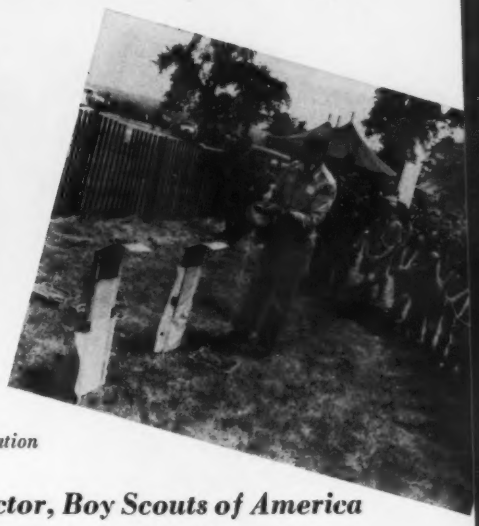
Assisting the Great Conservo, by introducing the film with live magic, were a group of twenty trained Explorer Scouts from the States of Pennsylvania, New Jersey and New York. These Explorers spent ten days learning the tricks of magic under the guidance of Dave Hanselman, graduate student at Cornell University, who has developed a conservation magic show for high school assembly programs, and whose ingenuity

Valley Forge for Biggest Conservation Education Show Ever Staged



Role of the raindrop

Scale model of watershed



Splash erosion demonstration

Jamboree

by Ted S. Petitt, *Conservation Director, Boy Scouts of America*

was responsible for the idea behind the "Conservation is Magic" theme.

But the big tent show featuring the Great Conservo was only the beginning of a two-hour conservation program. At the conclusion of the big tent show, Scouts were directed to an outdoor conservation midway composed of eighteen "side shows" in most of which through actual personal participation, they learned-by-doing how conservation works and how man uses and manages soil and water, minerals, grass and forests, fish and game resources.

The conservation agencies of the States of Pennsylvania, New Jersey and New York, working with the U. S. Fish and Wildlife Service, Soil Conservation Service and Forest Service, filled nearly fifteen acres with on-the-ground, in-the-ground, and up-in-the-air exhibits, covering most major phases of soil, water, forest, fish and game management. Nor did these demonstrations reflect just eastern conservation. Elements of the exhibits came from all sections of the country—soil profiles from five sections, East to West, North to South; mature southern pine logs from the South; western pine and Douglas fir from the West; wood products from the Northwest—and demonstrations of basic management techniques that apply from Maine to California or Michigan to Texas.

Feature attractions in these side shows were many and varied, too much so to describe in detail. But those that attracted the most interest w re as follows:

Soil and Water

Large models of a typical watershed, models complete with grass and trees, mountains and valleys, cultivated fields and pastures, rivers, streams, highways, villages, farms, ranches and factories were shown. Soil and water as basic resources in all phases of life and economy from agriculture to industry were graphically illustrated, with emphasis placed on complete watershed management as it affects farming, forestry, fishing and recreation, as well as flood control and water conservation for domestic uses.

Featured also in the soil and water areas were do-it-yourself demonstrations of the causes and results of soil erosion. Since Nature could not be relied upon to provide wind or water in the right place at the right time, huge electric fans were used to simulate natural conditions that create dust storms, and water was piped in to provide the "cause" of "gully washers" and flood conditions. Naturally, the "before and after" of good conservation pointed up preventive measures required in soil conservation from coast to coast.

Fish and Game

One hundred foot-long streams, with thirty-foot diameter ponds, were a feature of the fish and game areas. Since no suitably located natural waterway existed on the Valley Forge grounds, these "model" waterways were constructed by fishery biologists, under the supervision of Maurice Otis, of the New York State Conservation Department. In each of the streams were scale models of several trout stream improvement devices, such as log dams, V-dams, rock dams, spillways and rip-rapping designed to provide habitat suitable for trout.

In the construction of these waterways, which had a circulating water system and live fish in them, one of the problems encountered in real life situations was evident; namely, stream bank erosion. Consequently, hundreds of willows were planted along the banks, as well as other shrubs and grasses to prevent silting, which in this case would be doubly disastrous, since it would cloud the water, clog the pumps, and make it impossible to see how the various stream improvement devices had been built.

Another feature of the fish and game area was a deer yard, complete with live deer, a demonstration of over-browsing and pointing up over-population of deer. Included in this exhibit were wild turkeys to show how deer over-browsing depletes the range of deer food and natural turkey food, thus creating an additional problem. Included in this area was an exhibit of whitetail antlers and jaws to show correlation of age, antler size and deer condition based on food.

Animal homes, from den trees and brushpiles to woodduck boxes and song bird nesting boxes, were shown too, with emphasis on where, how and why to use the "artificial" nesting boxes.

Forestry

Forest protection, management, utilization and recreation were the features of the forestry areas, which were begun a year ago so that model plantations, living examples of how a tree grows and on-the-ground demonstrations of how to plant a tree would all be in good shape by Jamboree opening.

Here Scouts used model fire towers, complete with fire-finder, string board

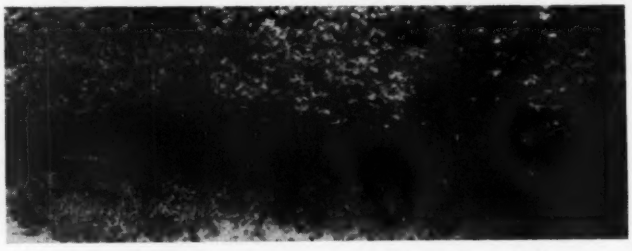
(*Continued on page* 37)

Twin Falls Deer

This Fall, after 40 years of buck hunting only, Adirondack deer hunters will have an opportunity, during one day of the season, to take antlerless deer throughout the Northern Zone counties. It's not enough but it will help and game biologists and managers rejoice at this opportunity, though limited, to rescue some of the herd through legal harvest from Winter starvation and to permit some recovery of over-browsed range.

But even the limited benefits to the herd, to sportsmen and to the deer range that can be secured through this one-day season on antlerless deer can be reduced if—through lack of understanding—private clubs controlling extensive tracts in the Adirondacks prohibit or discourage the harvest of does on their lands.

Some see clearly what is at stake. One who does is A. B. Hatch, Chairman, Fish and Game Committee of the Twin Falls Club in St. Lawrence County. Here, in an open letter to the membership of his club, he explains clearly what they stand to gain or lose in terms of future hunting on their property.—Editor



The author points out deer browse line at Twin Falls

"TO MEMBERS of the Twin Falls Club:

"I am informed that there is a movement afoot in St. Lawrence County among private deer-hunting clubs to mutually agree not to shoot doe on December 3 this year despite the recognized need for, and legislation enabling, reduction of the doe population. Actually, because of the way hunting is carried out on private clubs in the Adirondacks, there will be extremely few doe taken during a one-day Statewide doe season which falls on the last day of the regular buck season. Voluntary refrainment from shooting doe, therefore, in effect becomes merely a means for expressing the by now 'classical objection' of many sportsmen to the idea of killing doe. However, regardless of the negligible number of doe that can be taken, it is important to the present and future well-being of our herd that we reduce the doe population and since these one-day doe seasons may occur from now on almost every year, it is important that we gain experience this year in organizing such a hunt.

"It would be very exceptional if all of our members were sufficiently familiar with the intricacies of big game biology that they all approved the shooting of doe. Most sportsmen who started hunting during the 'buck law era' actively oppose such shooting. They believe that it is necessary to keep an overwhelmingly large doe population to assure adequate numbers of bucks.

"Actually, almost the precise opposite is true, but while the reasons for this truth may be obvious to a farmer or stockman they have until recently been notably obscure to most sportsmen. In order that each of you may know the facts, I am setting them down, particularly as they apply to our Twin Falls lands.

"The deer problem in the Adirondacks has arisen almost entirely because of under-utilization of doe. The availability of good deer food shrubs on small critical acreages of severe Winter deer yards limits the total number of deer that can be kept on any unit of land such as the 11,000 acres of our Club property. If a large excess of doe are allowed to build up they consume this critical Winter food and there is little left for growing big bucks or for producing sufficient healthy doe to maintain the herd at the level which the critical Winter deer yards will permit.

"Doe do not live forever; seldom do they die of old age. Death from starvation, disease and illegal shooting is, therefore, the destiny of every doe which is born into a herd where their harvesting is illegal or deliberately avoided. Periodic severe Winter mass starvation rather than shooting has, therefore, become the established mode of deer management in the Adirondacks generally, including the Twin Falls Club. As a result, the food in our critical severe Winter deer yards is each year becoming progressively poorer. The poorer this critical food becomes the fewer and more stunted will be our bucks. I counted 15 dead deer while walking along the trail in the small Copper Rock deer yard in the Spring of 1955 and Albert gave some

skeptical State conservation men quite a surprise on the magnitude of our starvation losses in other areas the same Spring.

"This past Winter, however, was an easy one on Club deer and the fawn crop as observed in mid-June is the best I have seen in years. About 50 per cent appear to be twins; hence, we are again building up a big surplus of doe whose destiny is final starvation and which, in the meantime, will damage still further our remaining critical Winter deer yards.

"For the moment, let us be completely callous about this periodic mass starvation and consider only the effects of an excess doe population on the primary objective of our Club; namely, providing every member with an opportunity to bag a good heavy buck with a large rack of antlers! Almost every member has commented at one time or another about the large number of doe and the few number, and small size, of the bucks which come through the watcher's line. The truth is that a large percentage of these apparent doe are actually 1½- and even 2½-year-old bucks whose antler development has been so arrested by poor Winter food that they do not even show above the hairline!

"Examination of thousands of Adirondack bucks has shown that it usually takes 2½ years and frequently 3½ years for a buck on *poor* Winter food to develop *legal* antlers. Contrariwise, a white-tailed buck on *good* Winter food averages 6 and may have as many as 10 points when he is only 1½ years old. He also weighs 25 to 35 pounds more than his twin brother on poor range. Incidentally, poor food during a fawn's first Winter causes *permanent* stunting just as it does in cattle! Real trophy heads are, therefore, never obtained on overcrowded ranges such as ours and the Adirondacks generally!

"As for the influence of a doe harvest upon the numbers of bucks killed in succeeding years, it is a rare sportsman who can be convinced of the facts. In almost every state and in every New York county where the after effects of a doe season have been studied the records show that the number as well as the size of the bucks bagged in succeeding years has increased! The reason is a straightforward one: Doe on poor Winter food in the Adirondacks average 0.9 fawns per doe, and a large number of them Winter starve, while doe on good Winter food average 1.7 fawns per doe and none of them starve. (Data obtained by the dissecting and counting fetal fawns in several hundred doe on good and on poor Adirondacks range.)

"Finally, the question arises as to why it is possible, as several states have demonstrated, to harvest up to 35 per cent of both doe and bucks each year and still have more and bigger deer for hunters than in the Adirondacks where only 8-10 per cent of the herd, as bucks only, is legally harvested each year. The simplest case is to assume two herds of equal size—1,000 at the beginning of the hunting season in each. The critical Winter ranges of the two herds receive the following usage:

35% harvest, good Winter food, no starvation	1,000 x 65% (Dec. 1) x 6 lbs. food per day x 90 days = 351,000 lbs. critical Winter food consumed
10% harvest, poor Winter food. Winter starvation	1,000 x 90% x 6 lbs. x 90 days = 486,000 lbs.

"Thus the herd in which bucks only are harvested *consumes 39 per cent more critical Winter food* than the herd with a harvest of 35 per cent immediately before onset of Winter. Actually the bucks-only-harvest-herd consumes much more than 39 per cent more food than the properly-harvested-herd because it may increase from the original 1,000 up to 2,500 to 4,000 deer during a period of 4 or 5 mild Winters while the properly-harvested-herd remains at 1,000. With such over populations virtually everything down to quarter-inch woody stubs are eaten when the severe Winter finally comes. Once a deer yard is so damaged its carrying capacity is reduced for years to come. Hence, the herd that can be supported will be smaller and the bucks will be smaller in size and poorer in antler development.

"I hope this analysis of the situation in the Adirondacks covers the important questions and that as many members, guests, and local-resident guests as possible will hunt on December 3 *and that they will take doe.*

"Incidentally, it will be surprising if the timberland owners in the Adirondacks do not soon become as insistent about the harvesting of doe as have the farmers of the Southern Tier. Regeneration of several of the most valuable timber trees has been completely suppressed on deer-wintering areas in the Adirondacks for a period of 30 to 40 years. Furthermore, almost every pole-sized hardwood which has survived on these wintering areas, because it grew above the height to which deer can reach (standing upright on their hind legs), is worthless because of heart rot introduced through exposed wood surfaces where half starved deer have broken branches in their efforts to reach the tender twig ends! It is not likely, accordingly, that timberland owners will long tolerate lessee-clubs which refuse to take doe when the legal opportunity to do so exists!

"Finally, I should mention that the professional game men in New York State take a dim view of private deer clubs. They believe such clubs are so reactionary that they will refuse to shoot doe despite enabling legislation and despite acceptance by public sportsmen that harvesting doe actually increases the number and size of bucks. The movement in St. Lawrence County is precisely what the professionals expected! In my opinion, however, it should be less difficult to educate the membership of private clubs than it has been to educate county sportsmen's clubs. If progress in such education is slow, it will be because professional game men do not try to obtain, or are unsuccessful in obtaining, legislation to enable the setting up of a demonstration area on private lands. So long as doe hunting must be confined to a single day nothing will be achieved on private deer clubs. What is needed is legislation, to enable the harvesting of a predetermined number of doe by hunter's choice during the regular season."

—A. B. Hatch, *Chairman,*
Fish and Game Committee,
Twin Falls Club

Wetlands, Water and Wildlife

PART II

WATERFOWLERS with glass, camera, gun or just good eyes and ears, can be grateful to the founding fathers of New York for choosing State boundaries that lie so nicely astride the Atlantic Flyway. Not all ducks using the Atlantic Flyway stop off or pass over the State, but a high proportion do drop down to rest and feed in our ponds and marshes, or at least swing by to take a look at our scenic terrain. Perhaps the bulk of our ducks come from Ontario and Quebec, but many hatched in Alaska, Yukon, Mackenzie, the Keewatin and Canadian prairies' region visit our waters. Hunters in western and central New York are well acquainted with ducks reared in the Prairie Provinces, and the Long Island coastal hunter encounters many birds from Labrador and the Maritimes.

Though the State may not quite have everything a duck can desire, it does offer a choice from highly productive, shallow, fresh-water marshes, ponds and lakes to brackish marshes and tidal areas for those that prefer a sea food diet. In between lies an array of boggy ponds with cranberries and leatherleaf, slow moving streams and flooded hardwoods.

A recent article in this magazine (August-September, 1957) told something of the damage and destruction to these wetlands and pointed out some of the perils which still exist for wetlands resources. All is not black, however. Many little pin pricks of light and a few big ones shine through on the map. The Department has made progress developing and setting aside areas for waterfowl and has more on the books.

Laying out a management plan for a state like New York is quite a complex problem. The needs of the marsh ducks are quite different from those of the divers, and management of the two groups varies with the region of the State concerned. For instance, refuges and rest areas for diving ducks are not too essential, since most present large water units permit rafting up beyond the range of gunners. To some extent these large water areas provide temporary refuge also for the marsh ducks during periods of heavy shooting pressure, but day in, day out, these species need some shallow water feeding and refuge areas if limited but sustained hunting is going to exist.

Thus management and habitat must be adapted to the species concerned.

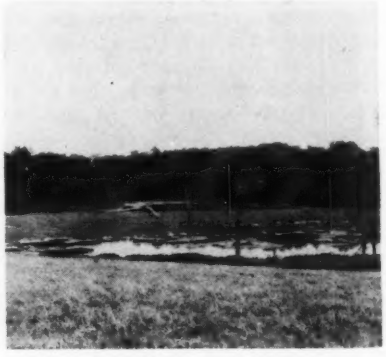
WETLANDS DISTRIBUTION

In a previous article on wetlands (August-September, 1957) the general types of wetlands resources of the State were discussed, but the regional distribution of these habitats were not emphasized. In the Erie-Ontario Lake Plains are to be found many fresh-water marsh habitats and slow moving streams. In this region also lie many of the larger marsh units of the State. Bounded on the north and west by Lakes Ontario and Erie, and closely abutting the Finger Lakes, this general region attracts the largest number of migrants, except perhaps for the waters around Long Island. At the same time, due basically to the high quality of these upland areas—high lime content and other essential ingredients of rich agricultural soils—through which the water drains, the resultant marshes are the most productive of the State. It is largely in this Lake Plains section of the State where we are concentrating on the construction and development of both large and small marsh areas. If we consider this region as including the area east through Syracuse and Oneida Lake, it would include considerably more than a third of the State's duck hunting fraternity. Based on the three factors—the importance as a stopover place for a large segment of the Atlantic Flyway population, the high potential for breeding as well as resting and feeding range, and numbers of resident sportsmen, this section ranks high in priorities for wetlands development.

After the morning hunt

Lake Plains Region

On the eastern edge of the Lake Plains region in Cayuga County lies Howlands Island with its many small artificial ponds. Surrounded by the slow-moving Seneca River and Barge Canal, Howlands Island is a good "duck factory" now and there's opportunity to develop more than 100 additional acres of marsh at this site. Nearby, to the north, lies



A pond at Howlands Island

Mud Lake, sometimes known as Beaver Lake, which contains over 200 acres of water and is under lease to the Department for management. Just next door in Onondaga County is the Department's Three Rivers Game Management Area. While this area was acquired primarily for public hunting of upland species, the creation of many small water units, along with one of nearly 100 acres, and the judicious arrangement of refuge and hunting areas has made it an important cog in our waterfowl management system. Not far removed in the other direction toward Cayuga Lake is the Federal Montezuma Wildlife Refuge which has salvaged and improved several thousand acres of waterfowl habitat. With its large-sized impoundments this area attracts diving ducks as well as marsh species. The only other large management area in the region is Oak Orchard, nearly 100 miles west in Genesee County. Within the region are several other large areas which could and should be acquired and soon, by either the State or Federal Service to capitalize on the potential of this important region.

Southern Tier Region

Immediately to the south lies the hilly Southern Tier region which, from a duck's

point of view, can be thought of as extending east into the Catskills. Unfortunately, this region does not have a high duck potential except as it shares some "overflow" from the Finger Lakes region. The primary development here must come in small, wildlife marshes which, in this region, have already demonstrated satisfactory production and waterfowl hunting opportunity. A part of the marsh at the south end of Canandaigua Lake included in the Department's High Tor Game Management Area affords some waterfowl production and hunting. It can furnish more of the same through further development and management. Spotted here and there elsewhere through the region are several middle-sized areas that, with development, could enhance the waterfowl population and the conservation of water resources.

Ontario-St. Lawrence Region

The Ontario-St. Lawrence region, which extends from Sandy Pond in Jefferson County to the Massena area in St. Lawrence County is twice-blessed—it's right on course for the major waterfowl flight lanes and its natural marsh habitat is ideal and extensive. Furthermore, still having a relatively low human population, the destruction of wetlands has not taken place here at the same pace as in the Lake Plains and on Long Island. In this region the State has developed the Perch River Game Management Area which, between the lake and the river impoundment, has more than 2,000 acres of good waterfowl production area. In this same area and now under construction, in co-operation with the St. Lawrence Power Authority, are the dikes

Marine District ducks

which will create an additional 2,000 acres of shallow impoundments for fishing, waterfowl production and hunting. The importance of this region is now recognized and, as the years go by, it will become an increasingly vital link in our wetlands management program. In view of the high potential for shallow impoundments, much more attention should be given in this region to the acquisition and development of wetland units. They would serve both the waterfowler and water conservation.

Ducks and spray at Lake Ontario

Adirondacks Region

Within the Adirondacks, water areas are numerous but duck populations as a whole, relatively low. Soils of granite origin and a deficiency of limestone result in poor quality marshes, as a general rule. On the other hand, the area as a whole is extensive enough to produce a considerable number of waterfowl, including species not nesting elsewhere in the State. There is opportunity to do more than at present to manage waterfowl in this area. On bigger streams such as Raquette and Saranac rivers with their alluvial valleys there are many back-water swales and marshes which in wet years are highly productive. The creation of small check-dams would help to keep these areas productive every year. Many opportunities for this type of structure exist, both on public and private holdings.

Lake Champlain Region

The Lake Champlain region reaches into another part of the duck world. Except for local birds most of the waterfowl passing through this region hail from Quebec. The foremost State waterfowl area in this region at the present time is Lake Alice in Clinton County which has over 300 acres of impoundment. As further development and management is carried on, the area should increase in importance both for breeding and flight birds. Further south along the lake lie the Au Sable Delta of some 600 acres and Wickham Marsh of 200 acres. Both have breeding bird potentials and the former, in particular, seems to have a high potential for development as a shooting area. There are other smaller units, and perhaps one or two of larger size in the region that would lend themselves well to development both for waterfowl and water conservation.

Hudson Valley Region

Next in line is the Hudson Valley which shares very similar flight groups with the Champlain region. The terrain of this region does not offer many extensive areas for development, but those that are available have a relatively high production potential. The best State area, Vischers Ferry on the Mohawk River in the populous Capital District, includes some 600 acres under Department control and now primarily needs some clearing and farm cropping to develop its maximum hunting potential. Rogers Island in the Hudson River near Catskill serves primarily as a refuge area and is not too important in terms of water control, although it is scheduled for some pothole construction in the near future. Essentially, the Hudson Valley is in need of development of more small and middle-sized water units that would function in all phases of the conservation picture.

A rig of decoys on Cayuga Lake

Marine District

Long Island brings one into practically a different world where most of the dabbling ducks have come down the Atlantic Coast primarily. Here, though, one meets up with broadbills from Alaska and redheads from Manitoba. In the Marine District, competition for lands and water for numerous, and sometimes conflicting purposes, is extremely acute, and it's here that our greatest losses in wetlands are occurring. Preservation of space for waterfowl and for their pursuit is both expensive and urgent. Unfortu-

(*Continued on page* 34)

Anatomy of the Whitetail Deer

PEOPLE are usually curious about what makes things tick—and this trait continues from the time a youngster dismantles the family's best alarm clock without thought of putting it back together. Pictures on the opposite page may appeal to a reader interested in deer for a similar reason, though the deer hunter may be more specifically curious about vulnerable points for obtaining quick, clean kills of his quarry. Knowing the locations of bones, joints and muscle masses helps a man also toward accomplishing a clean salvage job on the meat.

The fleet, graceful movements of the whitetail are the product of a wonderfully designed and co-ordinated body which in the buck takes about four or five years to mature, and in the doe, a year or so less. The ultimate size which any individual deer attains, providing he lives to maturity, depends on his parentage, but also on how well nourished he was as a fawn and through his growing years. Stunted bodies result from poor or inadequate food, as well as do stunted antlers. In the case of stunted antlers, however, since antlers are normally shed each year, there is an annual opportunity to grow a respectable set *if* sufficient food is available.

The internal organs arouse our interest for various reasons, but principally because many of us never have the opportunity to see them (the unsuccessful hunter is a particularly sad example!). The deer is a ruminant like cattle, sheep, goats, etc. and has four stomachs. He is able to store large quantities of food in the rumen (first stomach) and digest it at leisure as it is passed through the succeeding three stomachs and the long intestinal tract. But, he requires roughage to keep this food properly moving. Hay may work as a good roughage, but unless the deer has become accustomed and adjusted to cured hay for food, he gets little nourishment from it, may actually starve on a hay diet.

The liver has no gall bladder. In some areas, the giant liver fluke is commonly seen in this organ, the sight of which arouses consternation and sometimes the very false impression that the deer was suffering from a contagious disease.

You will notice the uterus or womb is divided. Twinning is a normal and expected pregnancy in white-tailed deer, and triplets are not uncommon. In fact there are records of quadruplets! The average pregnancy lasts about 200 days. You will note also where the ovaries are located, and by examination of these organs alone we can obtain information on the breeding history of the doe from "egg scars" in them.

Deer are probably in their most healthy and vigorous state just prior to and during the Fall mating season. Most hunting seasons are during this period but there is no evidence that the hunting activities of men appreciably interfere with successful matings. Late Winter and early Spring are critical periods in survival of deer in northern latitudes, largely because of reduced availability of wholesome food. When nutrition is poor, parasites and disease may tip the balance in favor of death. And when deer are too numerous and closely associated, losses from starvation and disease are almost inevitable.

When one is well acquainted with the healthy, normal appearance of the deer anatomy, disease or abnormal conditions will be noted more easily. By carefully studying hundreds of deer, both internally and externally, we have learned to tell their age, diagnose their state of health and vigor, the degree of hardship they have undergone from starvation, accident, disease, parasitism, their stage in the breeding cycle, breeding success, and some of the abnormal conditions which are probably hereditary. In short, to the student trained in careful, systematic observation of this animal, its history is revealed, and through study of sample numbers, the state of health of a whole herd can be quite accurately determined.

It is for obtaining such samples that your Department operates the deer check stations, and thereby keeps a check on the state of health of your deer herds. The knowledge gleaned from these studies has made it possible to safely recommend and to pursue the generous deer seasons now in force. The results will be followed carefully to safeguard this great resource and adjust these seasons as the deer themselves will indicate what adjustments are required for a better management of their numbers.

—E. L. CHEATUM
Chief Bureau of Game,
N. Y. S. Conservation Department

FIGURE 1—MUSCLES

Masseter	1
Levator nasolabialis	2, 3
Zygomaticus	4
Buccinator	5
Arcus Zygomaticus	6
Trapezius	7, 10
Brachiocephalicus	8, 11
Shoulder—transverse process muscle	9
Sterno—cephalicus	12
Obliquus abdominis (externus)	13
Superficial pectoral (brisket)	14
Triceps	15, 24
Extensor carpi (radialis)	16
Extensor digiti	17, 18
Extensor carpi (obliquus)	19
Flexor tendons of metatarsus	20, 21
Tendon of extensor digiti	22
Extensor carpi (ulnaris)	23
Deltoid	25
Tensor fasciae (antebrachii)	26
Latissimus dorsi	27
Deep pectoral	28
Serratus ventralis	29
Obliquus abdominis (externus)	30
Aponeurosis	31
Lumbo-dorsal fascia	32
Serratus dorsalis	33
Gluteus medius	34
Tensor fasciae (latae)	35
Trochanter major	36
Biceps	37, 38
Semimembranosus	39
Semitendinosus	40

Gastrocnemius	1′
Tendon of Achilles	2′
Flexor tendon (deep)	3′
Lateral extensor	4′
Long extensor	5′
Superficial flexor tendon	6′
Deep flexor tendon	7′
Peroneus longus	8′
Tendon (anterior)	9′
Flexor digitorum (pedislongus)	10′

FIGURE 1—BONES

(Circled Numbers)

1 *Skull*
2 *Cervical* (neck) *vertebrae*
3 *1st Thoracic* (rib) *vertebra*
4 *Scapula* (shoulder blade) *cartilage*
5 *Thoracic* (rib) *vertebrae*

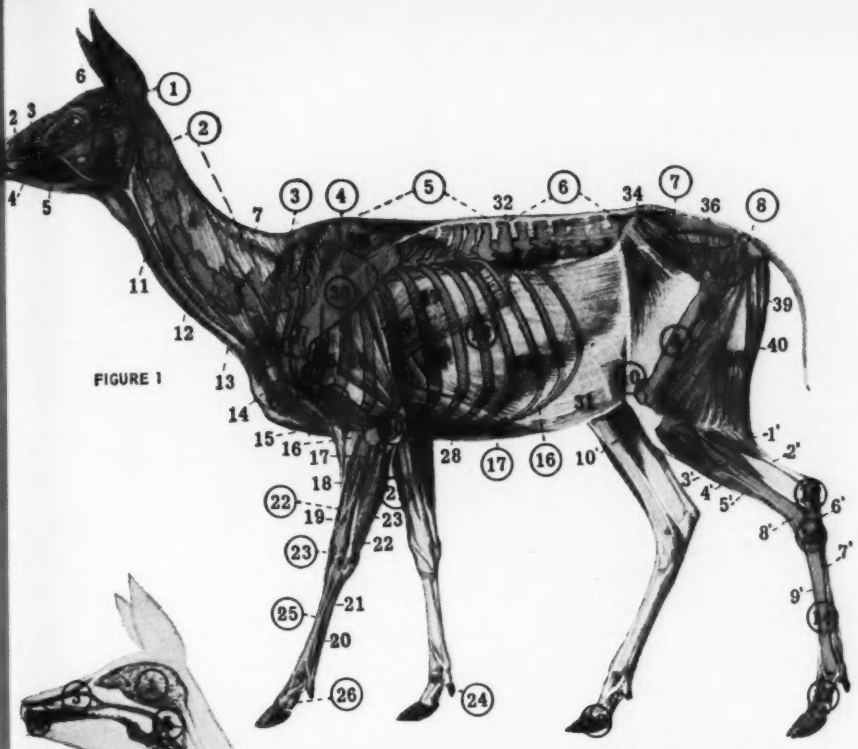


FIGURE 1

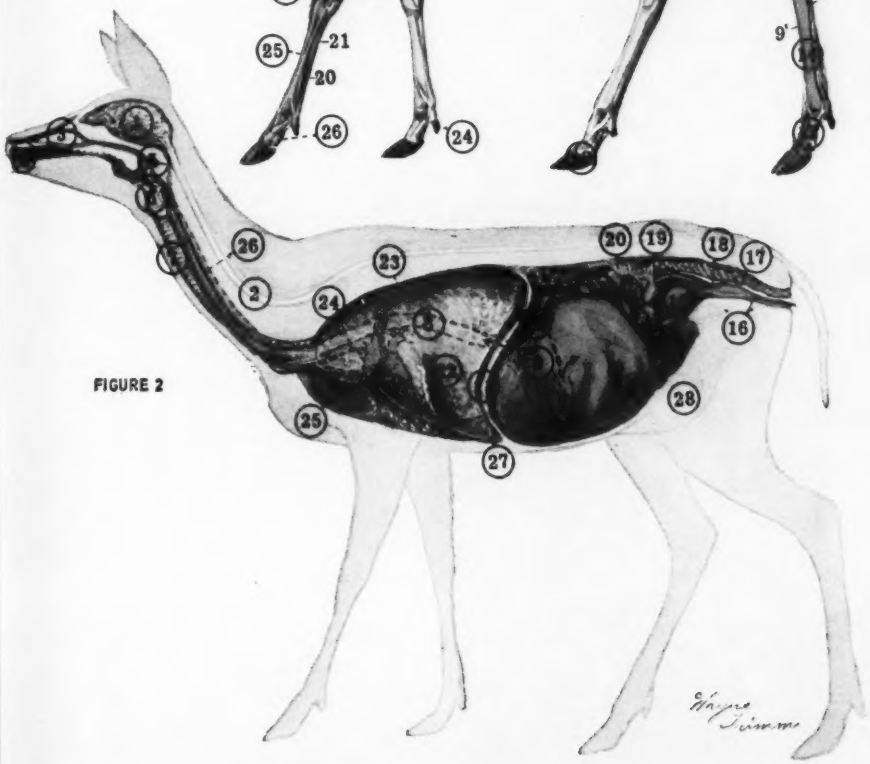


FIGURE 2

FIGURE 3

6 *Lumbar* (loin) *vertebrae*
7 *Ilium* (hip)
8 *Ischium* (rump)
9 *Femur* (ham)
10 *Patella* (knee cap)
11 *Tibia* (shin)
12 *Tuber calcis* (heel or hock)
13 *Tarsus* (ankle)
14 *Metatarsus* (canon)
15 *Phalanges* (toe bones)
16 *Rib Cartilages* (floating ribs)
17 *Xiphoid* (of breast bone) *cartilage*
18 *Rib Cage*
19 *Hoof* (toe nail)
20 *Olecranon* (of ulna)
21 *Ulna*
22 *Radius*
23 *Carpals* (wrist)
24 *Dew claw of phalanges*
25 *Metacarpal* (canon)
26 *Phalanges* (toe bones)
27 *Humerus* (upper arm bone)
28 *Sternum* (breast bone)
29 *1st Rib*
30 *Scapula* (shoulder blade)

FIGURES 2 AND 3

INTERNAL ORGANS

1 *Brain*
2 *Spinal cord*
3 *Nasal sinuses*
4 *Mouth cavity*
5 *Throat pouches*
6 *Voice box*
7 *Windpipe*
8 *Gullet*
9 *Four-part stomach*
10 *Spleen*
11 *Diaphragm*
12 *Liver*
13 *Kidney* (left)
14 *Small intestines*
15 *Urinary bladder*
16 *Vagina*
17 *Rectum*
18 *Cervix*
19 *Womb* (left branch)
20 *Ovary* (left)
21 *Heart*
22 *Lungs*
23 *Aortic artery* (posterior branch)
24 *Aortic artery* (anterior branch)
25 *Anterior caval vein*
26 *Carotid artery* (left)
27 *Post caval vein*
28 *Mammary* (udder)

Field Dressing a Deer

DO'S AND DONT'S

Cuts for head mounts

THOUSANDS of hunters—old and new—who have never killed a deer before are going to get one this Fall. If it is a "first" for you, you will be faced with the problem of field dressing it. Like most things, there is a simple, logical way of doing it—and doing it without mutilating or spoiling the venison. Here are the steps in one, two, three apple-pie order:

Once the deer is down, it's important to drain the blood out of its system before it cools and clots. Turn the deer on its back and cut a circle around the vent, freeing it and the attached intestinal tube from the connective tissue. Pull it out an inch or so and tie it off tightly, sealing it. Next, gingerly insert the point of your knife below the breast plate, pointing toward the chest cavity. (The intestines lie back of this point and it's important not to pierce them.) With the first two fingers of your left hand acting as guides to keep the point of the knife away from the intestines and to keep it from going too deep, place a knife blade between the fingers and make a slit in the belly wall from chest to the genitals. Flip the deer on its side. Now reach in and free the tied vent tube. Pull it into the body cavity. The vent should look like the picture when you're through.

Next, cut through the diaphragm in the chest close to the ribs, freeing the lungs and the heart. Pull them out together with the liver and the entrails attached. Now turn the deer over on its belly to drain out the blood. Roll the deer on its side and reach into the chest cavity with both hands (sleeves rolled up high) to the junction of the neck and body. Grasp the windpipe and esophagus with your left hand and free them with the knife in your right. Pull them out. Your deer is now "field dressed."

Prop open the belly walls with a short stick to allow air to circulate and cool the body cavity. If you kill a buck, slit the skin containing the testicles and remove them *but do not remove* the skin pouch. New York's laws require that proof of sex be left on the carcass. This pouch allows you to ship the head for mounting while retaining proof of sex on the body. Pack the liver and heart in a polyethylene bag and drag your deer out.

If you're going home right away, keep your deer from the hood heat of your car. Tie the deer on top of the car or put it in the trunk, leaving the door a-jar for air circulation. When you get home, hang your deer by the neck or the antlers and leave it for 5 to 10 days to age and tenderize. (Your butcher does the same with steer carcasses.) Air temperature should be 35 degrees or below. If below freezing, you can age the deer longer than 10 days. If the temperature is higher than 35 degrees, shorten the aging time. Don't let the meat spoil. (Some folks prefer to age the meat without the hide since it ages faster. Do not hang the deer by the hind legs. Blood will drain into the chest cavity, collect there and sour, spoiling your meat. When hung by the head, the blood drains through the vent opening, allowing no spoilage.)

First step in dressing out

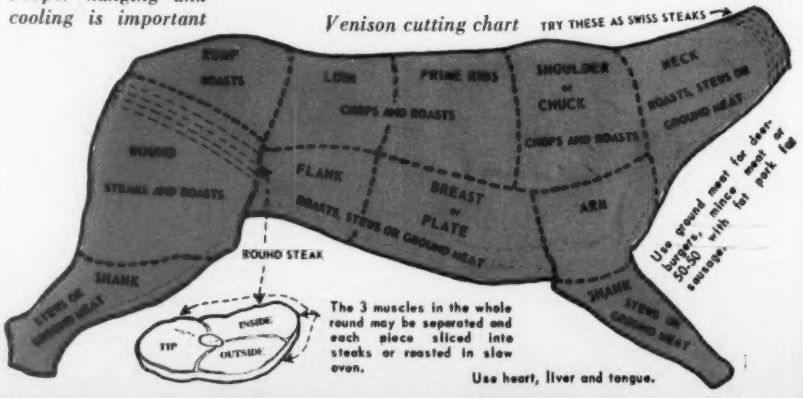
Proper hanging and cooling is important

Mounts: If you're going to mount the head, do not slit the hide on the chest beyond the front legs or the brisket. You can have a choice of three head mounts: (1) Full neck, (2) half neck, (3) scalp or head, each requiring different amounts of hide for the capes. Check the drawing first before making your cuts. Make your cuts conform to the type head mount you desire. The numbers on the cut lines of the drawing match the types of mounts listed above.

If you have a buck, make a Y-shaped cut running from the base of each antler to the middle of the neck and down the neck to the shoulders. (See drawing.) If you have a doe, omit the Y-cut and make a straight cut along the top of the

(*Continued on page 33*)

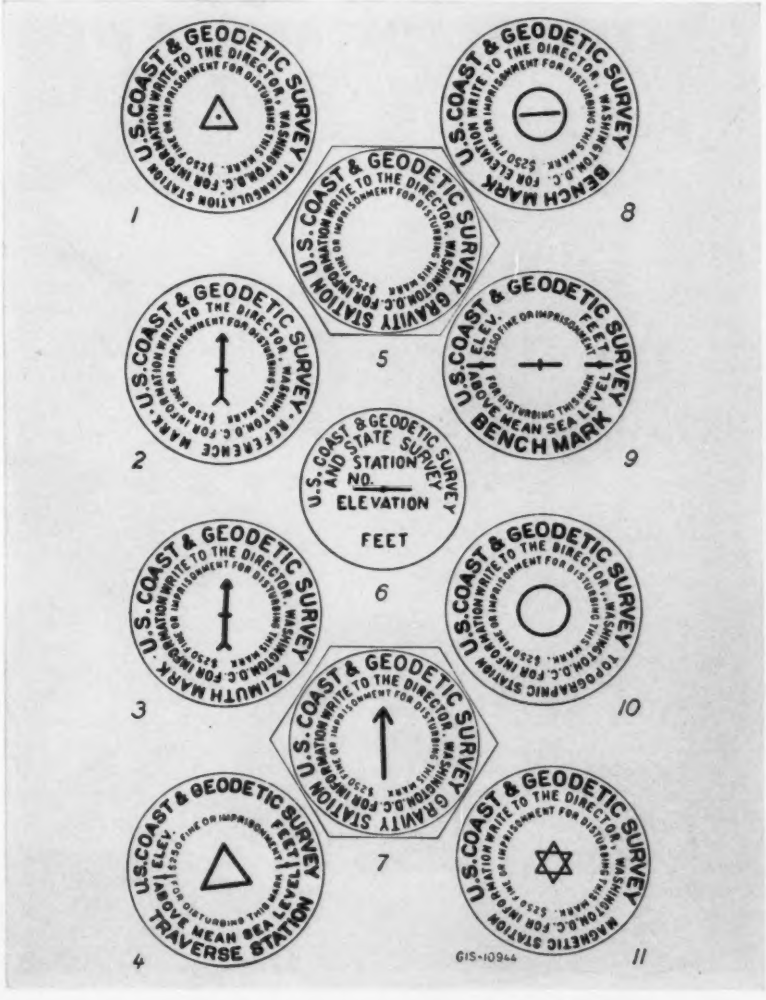
Venison cutting chart



BENCH MARKS

FOR our second cover (inside first cover, as you will) of this issue we have a reproduction of a painting by Clayt Seagears—an Autumn forest scene in the Adirondacks along the sort of woodland trail that will, before long, look pretty enticing to a still-hunter, or maybe a good place to post a watch.

But there's something else there—those squiggles, numerals and initials—B.M. painted on the trunk of the tree in the right foreground. What do they mean? Well, unlike some other initial-adorned trees, it doesn't mean that "Bob" loves "Mary," nor is it a site marked out by some sylvan humanitarian for the placement of a bench to rest the weary traveller. Yet that comes closer, for the initials B. M. are short for "Bench Mark," as, I suspect, most of you know. It's engineer's and surveyor's talk and designates the location of a point of known elevation above sea level established by running a line of levels. In this case, the marks on the tree are the tip-off to the engineer that somewhere hard-by he'll find a circular metal disc, perhaps imbedded in that granite boulder or perhaps in a scraped root-section of that very tree, marking the precise elevation above mean sea level at that point. In this case, the woodland bench mark served, no doubt, as a key point in laying out Seagears' inviting old road and is so recorded on that town's or county's highway maps.



STANDARD MARKS OF THE U. S. COAST AND GEODETIC SURVEY

1. Triangulation station mark.
2. Reference mark.
3. Azimuth mark.
4. Traverse station mark.
5. Gravity station mark.
6. State Survey mark.
7. Gravity reference mark.
8. Tidal bench mark.
9. Geodetic bench mark.
10. Topographic station mark.
11. Magnetic station mark.

It all began a long while ago in this country—the running of levels and surveys through what was then a wilderness; the establishment, identification and marking of fixed points—bench marks, triangulation stations and traverse stations. The job was done; is still being done by the United States Coast and Geodetic Survey and the United States Geological Survey, aided and abetted in later years by State engineers and often by surveyors employed by railroads, utility companies and others.

Out of it all came charted trails across the country, then rail links from coast to coast, the establishment of state lines, canals and navigational routes, roads, towns and cities, a system of transcontinental highways, and maps—ever better, more precise maps—as the network of bench marks and kindred fixed points spread and was corrected for accuracy.

It's no exaggeration to say that our prosperity and growth as a Nation is keyed in with the early and continuing surveys; the establishment of those little round bronze bench mark discs. And as for us individually—well, there's not a smart outdoorsman around who wouldn't rate a compass and U.S.G.S. topographical maps as Nos. 1 and 2, in order of essentials.

—A. W. BROMLEY

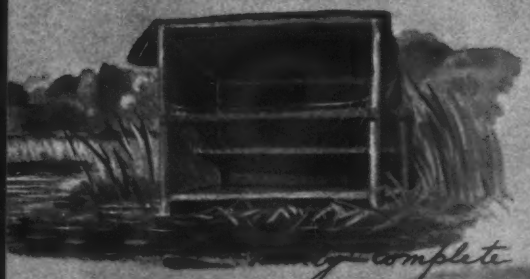
Duck Hunting Sketch Book

dancing the load—

supports

few red cedars and
the blind is ready

woodie looks it ov



—complete

Touching up
a 'black' decoy

setting blocks in the fog

a pair of blacks swing by

after hours—
and here they come!

Labrador Retriever

DUCK HUNTING—

CALCULATED INSANITY

THERE are those who say all hunters are crazy—"those" being wives, for the most part, and they've got a lot of logic on their side.

Wives are practical people, generally speaking, except when it comes to hats and such, and many of them are pretty good at simple arithmetic. Sometime this Fall stop in at the local super market and watch the expression on wives' faces—preoccupied! Thinking of what to get for dinner, you suppose. Nope, they are wondering how much that three-shot automatic cost; how much of a dent that four-day trip to "Marsh Pond" will put in the family budget; why Tom needs more decoys when they've already crowded the car out of the garage?

Well, when a wife starts running thoughts like these through her head, figures start popping up just like on a tape in a cash register and when the bell rings, she carries the total over to the meat department and starts comparing it to the price of beefsteaks, standing rib roasts and center-cut lamb chops. She has a hunch, even at today's meat prices, that the store is cheaper.

But if you are a duck hunter there's no use worrying about what your wife thinks; chances are you won't have one—long. And don't think you'll get any sympathy from fellow duck hunters for here's one group that's given up trying to argue their own sanity. And small wonder!

Let's take jump shooting as a starter. You can handle this two ways—on foot or in a boat, depending on the situation. If on foot you pick a slough, swamp or marsh where the cover is high and dense—just the sort of thing ducks like to seek shelter in—and you forge ahead. You can't see where your walking but with a little exploratory work with the feet, you can often teeter from bog to bog until you flush a duck—whereupon you slide off the bog of the moment and disappear from view. Or if not bog-hopping, you'll find muskrat burrows are handy to step into at the critical moment.

A boat is easier. Canoes are good; duck boats even better. There's less leg room in them and they have all the stability of a hollowed-out toothpick. A slow-moving river or creek is fine for this with plenty of ox-bows so you and your companion can glide around the corners to surprise the unsuspecting quackers. Then you both swing quickly to port and fire. After a little practice you will learn how to extricate your legs from under the crossbars while suspended head down under water.

But the really scientific way of hunting ducks is from a blind with a good rig of decoys. This requires a few simple preparations. Let's begin with the blind. (We'll assume that you have an ideal site for your blind—something about as easy to come by as the Hope Diamond). Depending upon the site, the blind may be constructed of stone, lumber, metal, wire, cattails, cornstalks, bulrushes or artificial grass mats filched from the local undertaker. During the construction period—a matter of not more than a week's work by three men and a boy to fetch and carry—the wind will hold just as figured so the ducks will swing into the decoys in easy range. Throughout the season, however, the wind will blow steadily from the opposite quarter; directly into the blind and the ducks will drop in just out of range beyond the outermost decoys.

And now the decoys. Here's the key to every good duck hunter's success. Excellent decoys can be purchased in the market for $4 to $5 apiece but you can buy cork, balsa and cedar and with ingenuity, plus a few hundred dollars worth of power tools, you can build yourself a fine rig. Not figuring your time, they shouldn't run you more than twice what you would pay for them ready-made.

Setting the decoys out is an art in itself—especially in the dark. But after some years of practice, you'll be able to manage split-V's, button hooks and other arrangements that will pull the ducks right into range—unless there happens to be a half dozen mud hens puttering around on the other side of the marsh, in which case every duck that shows will decoy over there.

And then there's weather. If any further evidence is needed to prove that duck hunters are beyond the point of no return, a description of good duck hunting weather will clinch the case. But I haven't got the time now. I've got to get over to the postoffice and get my duck stamp.

—AL. BROMLEY

Nursery stock damaged by rabbits

Ornamentals are prime targets for rabbits

RABBIT TROUBLE

by W. Robert Eadie,
Professor of Zoology,
Conservation Department,
Cornell University

Deer are fine and grouse divine
But Honey, for my money,
Boil the pot and keep it hot
For I'll bring home a bunny!

AND that's the way it goes with most hunters, for the abundant cottontail is our most important game animal in terms of sport provided and numbers taken. Now I hate to bring up the subject, but our favorite game animal has a few bad habits around farms or homes. Anyone who has had a choice shrub gnawed to a nubbin over the Winter season knows what I mean. Of course, you can't really blame the rabbit—he's only trying to get along as best he can under the circumstances. But home owners, nurserymen and fruit growers sometimes have trouble looking at it in that way—when it hits the ol' pocketbook.

Thus for many, many years a search has gone on for an effective repellent—something you could paint or spray on shrubs or trees to keep the bunnies away. A list of materials or chemicals tried would take all the remaining space here. Some of the most weird concoctions have contained such things as cow manure, fresh blood, hair plaster (whatever *that* is!), axle grease, moth balls, or whale oil. One single formula, dreamed up by someone, had in it soap, cement, rockwool and plaster. That would seem like quite a mouthful, but it didn't stop the rabbits!

Luckily, in more recent years some really good repellents have been found and thoroughly tested under field conditions. One simple one that you can prepare at home came from Michigan State University and consists of seven pounds of powdered rosin in one gallon of ethyl alcohol (the denatured kind you get at the paint store). Let stand in warm place for a day or two and then paint on dry bark. The coating will last all Winter. Or if you want to spray, add another gallon of alcohol—but be sure to clean the sprayer! The rabbits may clip a twig or two, but generally they leave this repellent alone. As repellents go, this one is inexpensive and the makin's are handy. One gallon should treat about 100 small trees.

The U. S. Fish and Wildlife Service developed and tested a good rabbit repellent called "96A." This is black in color and has many compounds in it, so if you want this one you had better let them mix it. (Pocatello Supply Depot, U. S. Fish and Wildlife Service, Pocatello, Idaho.)

The deer repellent "Z.I.P." is a good rabbit repellent when used as a fairly thick paint, but it did not last all Winter in our tests. (Larvacide Products, Inc., 117 Liberty Street, New York 6, New York.)

Another commercial repellent that showed up well was "Tre-Tex." (Tre-Tex Company, Plainfield, Indiana.) Another one tested was "Ringwood Repellent." (Ringwood Chemical Corporation, Ringwood, Illinois.) The rabbits would not co-operate in our tests, but others have found it very good elsewhere, although a little expensive.

I could go on (there are other repellents), but these seemed to be the best in our tests and the most practical.

If you don't want to fuss with repellents, there are other simple "tried and true" old remedies for rabbit trouble. You can surround each favorite tree or shrub with a wire mesh cylinder, two or three feet high, for the Winter season. You may, instead, raid the kitchen and wrap aluminum foil around individual trunks of small trees. (Commercial products of crimped aluminum foil are now available for this purpose.) Even old CONSERVATIONISTS (Heaven forbid!) could be used if tied securely. In any case, remember that snow will increase the height to which a rabbit may reach.

Nurserymen may surround small plots of valuable nursery stock with a simple fence of two-foot poultry netting on stout stakes. The lower edge should be close to the ground, and if you use soft wire to attach the fence to the stakes, it will be easy to take down and roll up when Winter is over. Such a fence may cost $60 or more per acre inclosed, but will last for years if cared for properly. Incidentally, a fence of this type is *the* answer to the problem of rabbits in the home garden. Ten dollars worth of fencing will surround the rabbit fodder in the average garden, and may last for ten years if stored under cover after the season is over—complete rabbit protection for $1 a year!

One way to have fewer rabbits on the home grounds is to grab the brush-hook and get after the tall weeds and overgrown brush. However, if you like things as they are, don't worry—you'll always have *some* rabbits anyway.

This article is based on studies conducted by the Conservation Department under the P.-R. (Federal Aid in Wildlife Restoration) Program.

Weathering the Winter

by Dr. Edgar M. Reilly, Jr.,* *Curator of Zoology, N. Y. S. Museum*

When snow lies deep over the ground and a cold wind whistles shrilly in the chimney, how are the wild creatures getting along? Not so badly, as you will see—.

To man, preparation for Winter is a serious business; here in New York we begin thinking of it sometime in September. Sweaters and heavy coats are dragged out of moth balls and other storage for a good airing. Despite remembrances of aching backs from former seasons, we start sorting storm windows and spreading insulation. Putting on snow tires and winterizing cars must be done to keep us on the move and so are well worth the cost and effort.

Animals do it differently: With them it's an automatic process requiring no real thought; the hours are right and the work is often most pleasant. Our whitetail deer simply grow a thicker fur coat and, if Summer feeding has been good, deposit a thicker layer of energizing and insulating fat. While we may moan and groan doing it our way, the deer accomplishes his winterizing by eating and sleeping more during the Summer months. When the echelonned geese are stringing southward through the Fall skies, the deer are putting on their heavier coats; cold weather wear with a somber cast that blends well with the gray woodlands of Winter.

The little chipmunk and many related animals grow a bit fatter by cramming their stomachs and their dens with their favored food; then, when the cold heads their way, they curl up in rock crevices or holes in the ground and sleep off most of the Winter. On occasions of wakefulness they feed on a large supply of nuts and seeds they've prudently stored in an underground chamber connected to their sleeping quarters. When they go into short periods of true hibernation or dormancy, their hearts beat much more slowly and the living process is slowed to the point that they require hardly any food at all.

Incidentally, should any one ask you why the chipmunks always have such neat round holes uncluttered by mounds of dirt, tell them it's because they dig them from the bottom up. This may sound crazy, but it's true. They first dig their den in the ground, piling the dirt at the entrance, as does the woodchuck. Then they dig a new entrance some distance from the original entrance piling the soil from this excavation around the first hole. They then scatter the soil about the original entrance and plug it up. Nature soon camouflages the spot with plants and fallen leaves.

The gray squirrel is active throughout the Winter in New York State. He stores enough nuts to carry him through the worst of the Winter weather in tree hollows or under dirt and leaves. His fur coat, helped by the better feeding of Summer, has thickened and slickened; his tail fluffed out in a gray bush. An untidy mess of leaves high in some tree is sufficient insulation to furnish a comfortable Winter nest for the gray squirrel.

The beaver has managed to put man's planned economy to shame, but he works hard for this dubious distinction. All Summer long he collects the most "tender" cuts of tree branches and twigs and anchors them in the mud at the bottom of his pond where the water never freezes solid. If he has to start from scratch it means he must build a dam and a house, mate and start a family, which, with his "store house" work, gives him no time for idling. Nature

(*Continued on page* 26)

The Whitetail Deer
loses the short red hair of summer
for the long hair of winter

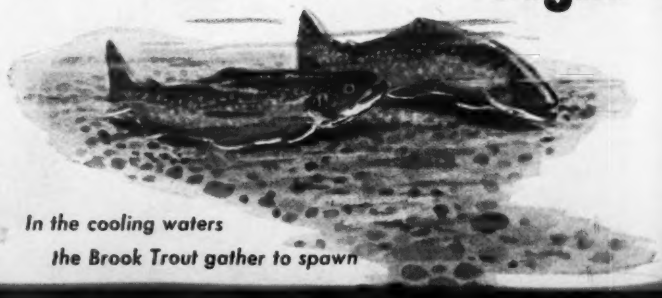
Beaver store cuttings in the bottom of the pond

Blackbird

The Ruffed Grouse
grows "snowshoes" on its fee

Woodchucks are fat—
ready for winter hibernation

Signs of



In the cooling waters
the Brook Trout gather to spawn

Chipmunks with full cheek pouches are busy storing food–
then sleep away the coldest winter days

Gray Squirrels are hiding nuts
against the lean days of winter

rd ks move south

Black Bears are fat
and nearly ready for their winter's sleep

ts feet

The Short-tailed Weasel becomes ermine-white

# of Autumn

Varying Hares change from brown to white

(*Continued from page* 23)

in a moment of understandable sympathy eased the beaver's path by giving him an extra thick, warm and water repellant fur coat—without any down payments or monthly deductions. He needs it for swimming under the ice to where the juicy upper branches were stored.

Many birds, like the red-wings, simply fly South to warmer climes at the approach of Winter. For some birds to the North this may mean New York State as we do have milder Winters than Labrador. At least juncos, snow buntings, snowy owls and others think so. Feathers are excellent insulation, as anyone with an eider-down sleeping bag will tell you; in fact most birds could stay with us all Winter if only they had enough food. Our ruffed grouse (partridge to the hunter) manages to find enough food all year 'round, but in Winter he needs snowshoes to travel from one feeding area to the next. At the approach of Winter the scales on both sides of the partridge's toes grow longer, becoming comb-like bristles which make excellent snowshoes.

The black bear simply doesn't live up to his "folklore." Instead of going deep into caves and holes in the ground and sleeping the Winter through, as many persons believe, this animal that walks like a man merely fattens up on berries, beechnuts and such until his avoirdupois is wonderful to behold—the fatty layer may be four inches thick in places. Then, in his rolling, sailor-like gait, he hunts for a protected hollow or, if lucky, a dry shallow cave and sleeps it off. He may not notice it if you give him a good swift kick when you find him thus occupied, but then he may be just enough annoyed to kick back with well clawed paws. Once in a while during warm spells he rouses himself and staggers about the neighborhood looking for stray bits of food. Like that of most mammals in Winter, the fur coat furnished by Mother Nature is thicker in Winter. Bears do not go into true hibernation.

The 'chuck or groundhog is a true hibernator. He can curl up with a good bit of fat (his own) in bed, which is an earthen chamber below the frost line, and sleep through the whole Winter without any additional food or water. In this dormant stage the heart beat slows, the body temperature is lowered and the senses are dulled. A hibernating woodchuck may be handled quite roughly without rousing him at all. This doesn't mean he won't eat if given the chance and the proper temperature. On the contrary, he might appear above ground when rising temperatures of a late Winter arouse him from his extra deep sleep. Returning cold weather forces him back to his burrow until that time when the thaw is more permanent. Since clear skies during Winter generally mean lower temperatures, such weather on February 2nd gives rise to our groundhog legend.

Fish are usually less active in Winter than in Summer. Very few real facts are known about how they prepare for and survive the rigors of Winter. Brook and brown trout spawn in late Fall, but the eggs normally hold over in the spawning beds, hatching in early Spring. In the case of pond or lake fish, if the ice mantle allows enough light through into the water the fish survive very well; if snow blankets the ice for long periods cutting down the amount of light survival may be much less. Trout living in fast running water do not have to contend with this.

The snowshoe hare is active Summer and Winter. Nature seems to take better care of him than she does of the hard-working beaver, since beside a thick, warm fur coat the hare gets snowshoes. This is something which comes as a bonus with the fur coat. The hair on hare's feet grows denser and, filling in between the pads of the feet and over them, spreads them to snowshoe-size; not only that, they are skid-proof! For the hare's convenience his fur coat comes in mottled two-tone shades of white and brown for late Fall and Spring, but he has a white coat during the period when the ground is fully covered with snow. In Summer his fur is uniform brown.

The weasel gets the same color treatment from Mother Nature as the hare. He is the weasel in Summer and the ermine in Winter when he is white except for a black tip on his tail. Apparently royalty could not survive without its ermine robes and a Duke or Duchess simply isn't dressed without robes made of the skins of these small mammals. This makes the weasels' white Winter camouflage of doubtful survival value, though somewhat better than when royalty was in power. They can get closer to their prey in their white, Winter garb but are money in the bank to the trappers. The weasels in the warmer parts of North America (and Europe) don't become ermine, as a white coat has no survival value where little snow falls. Most North American ermine are found in Canada which can supply its British royalty. In New York we find most ermine in the Adirondack and Catskill mountain areas, but weasels all over.

Our animals must live right—they don't have to work as hard preparing for Winter as we do—unless they are really beavers.

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THE BEARS and THE BIOLOGISTS

605 pounds of black bear at dinner

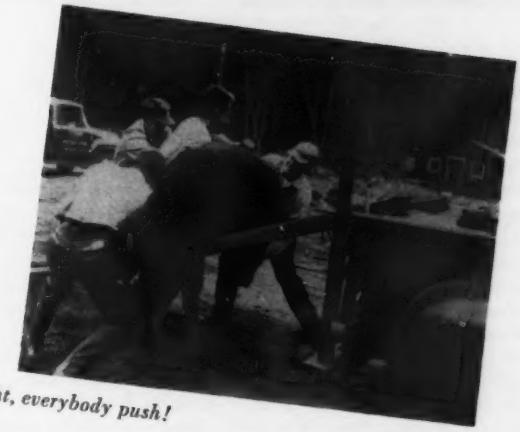
THE two biologists trussed the bear's legs together with stout rope; they arranged the chains of the block and fall used to hoist and suspend the animal from the draw bar of the overhead scales; they set themselves and hauled and hauled again. Finally the huge beast cleared the ground; the scale-bar swept upward; clicked against the stop pin at 600 pounds. There it was at scale maximum and there was more bear left over!

So went the first attempt to weigh the heaviest bear on record in New York State, and so far as we can determine, the heaviest black bear ever *authentically* recorded anywhere in the United States. Later, on tandem scales, the full weight was finally determined—605 pounds!

And he's still there in the Adirondacks, roaming around in the vicinity of Tupper Lake, none the worse for his short association with the biologists and the scales. In fact, something has been added—two nice shiny, numbered ear tags that will fetch any sportsman, lucky enough to catch up with him during the big game season, a $25 reward when turned in to the Conservation Department. And he has plenty of $25 ear-tag company. He belongs to a "lodge" now that boasts some 130 members all of whom have been lured into live traps, put to sleep with ether, weighed, measured

He taxed these scales beyond 600-pound limit

Ear-tagged and still asleep



All right, everybody push!

lengthwise, crosswise, up, down and every other way the biologists could think of, decorated with ear tags and put on the road back to bear country with a stern warning to stay away henceforth from town and campsite garbage dumps where they rummage and wax fat. They don't seem to pay too good attention though. One was released 43 miles from the point of capture and was right back at the old stand eight days later.

All this weighing, measuring and tagging is part of a co-operative black bear research project carried on by biologists of the Department of Conservation, Cornell University and the State Conservation Department under the P-R Federal Aid to Wildlife Program. As explained in our first report of this operation ("A Bear by the Tail," THE CONSERVATIONIST for October-November, 1956) the project has two objectives: First, the biologists want to learn more about this largest of our big game animals; what makes them tick? What all do they do? Where do they go—when and how far? What's the full story on their hibernation? Do individual female bears breed only in alternate years as supposed? How old do they get (the 605-pounder, a male, is between 5 and 10 years old) and how can age be determined accurately? What is the sex ratio? How many bears do we have in New York? (The biologists estimate between 3,000 and 3,500. And all such scientific snooping that will add up to provide information for better management of these biggest of our big game animals. The second objective is really a bonus of the first—the removal of some of these animals from the immediate vicinity of mountain resort towns, institutional camps and public campsites where they've ganged up during Summer months to scavenge free meals from adjacent garbage dumps. No one begrudges them the garbage—though there's something a little shameful in degrading these great wild beasts to grubbing pan-handlers—but the Conservation Department frets at the risks taken by unknowing tourists who *just must* get a good picture of the "cute fellows" even if they have to hit them on the nose with a long stick for a good pose.

Well, how does "Bruin the Big" stack up with his cohorts in New York—past and present? Actually, he isn't the biggest bear the biologists have trapped—just the heaviest. From tip of nose to tip of tail he measured 66 inches. The biggest one beat that by 13 inches. This one had a hind foot 8¾ inches long by 4⅛ inches wide, while the biggest hind tootsie (bear's) measured thus far went 8⅞ inches by 4⅞ inches. On his head, the tape stretched 15 inches from the tip of nose to back of skull vs the record "big head" so far of 17 inches. Still, what a king-size headache he must have had while shaking off the effects of that ether! On weight, there's no question he's the title holder but he has stiff competition. Probably the closest is William Waddell's bear killed in the Fall of 1955 in Warren County. That one weighed in at 540 pounds, hog-dressed, not including the heart, lungs and liver—probably close to 600 pounds "on the hoof." Jean Mose took one in 1938 (Adirondacks) that weighed 532 and Dave Fairbairn got one back in 1919 in Ulster County that tipped the scales at 530. In 1954, Egbert Shultz got another Ulster County whopper that went approximately 460 pounds. But the live-trapping biologists are piling up weight records that will give the hunter something to shoot at—444 pounds, 485, 481, 433, 411) and, on the same day they captured "Bruin the Big" they caught a smaller one—weight 562. It was the second round for that one. He had been livetrapped the first time in August, 1956, and weighed in then at 332. This year Labor Day, when recaptured, he was up to 562; net gain 230 pounds in one year!

Keep out of the garbage if you want to reduce!

Editor's note: This account is based on a report by C. W. Severinghaus, big game specialist for the Conservation Department and Hugh Black, Cornell University, leader of the P-R bear research project.

Warty Walleyes

by Roland Walker, *Department of Biology, Rensselaer Polytechnic Institute*

Fig. 1

Two walleyed pike, the left with lymphocystis warts; the right with skin sarcomas

Fig. 2

Tail of Oneida Lake walleye showing a large wart cut for microscopic examination

Fig. 3

Microscopic view — showing giant lymphocytis cells at the top; sarcoma at the bottom

EVERY now and then on Oneida Lake a pike fisherman catches a walleye disfigured by warts. It doesn't happen too often but for every one that's caught there's wide speculation: "What ails it?" "Will I get warts —or worse—from handling it?"

These warty walleyes turn up, too, in the Great Lakes and in some other waters in New York but perhaps most frequently in Oneida; maybe because there are so many pikeperch in that lake. These skin warts—some small, some large—may appear almost anywhere on the body, but perhaps most often on the fins (Fig. 1) or gill covers. The commonest type of wart is due to the lymphocystis virus disease, which must have been widespread in these waters for many years, although the published records are more recent, and scant for New York State. In Oneida Lake, however, the walleyes are subject also to a skin tumor which has been confused with lymphocystis.

The first published reports of lymphocystis warts are from about the turn of the century. Various species of flatfish in European waters were affected: In British waters, in the Baltic and up to 10 per cent incidence in the Barents Sea fishery. Then there are reports of lymphocystis in European fresh-water fishes, too. In this country the first report of lymphocystis (in a walleye from Wisconsin) was not published until 1918, yet some of the older fishermen, both on Lake Oneida and on Lake Erie, tell of warty fish from their earliest fishing days. In this country the walleye is the only species in which there have been consistent reports of the occurrence of lymphocystis disease, varying from a fraction of 1 per cent up to 5 per cent or more. We can be fairly sure of this, at least back to the 1920's. Now that more attention has been paid to the disease, we know that it is widespread—in both salt and fresh-water fish in Europe and the U.S.; at least from Massachusetts to Florida, and west to the Pacific. It has been reported from many species in a wide range of families of bony fish; in food fish and in tropical aquarium fish. However, there are few species in which the disease is common.

In a well developed lymphocystis wart, a hand lens shows a texture like fine-grained tapioca. Each of the "grains" is an enormously enlarged cell of the fish's connective tissue. As the warts get older and larger, over a period of months, the skin surface may stretch, and the scale pattern may be distorted by the enlarging cells. The resultant lump may become pinkish from the development of new blood vessels. Eventually the surface breaks and what was a firm lump becomes looser textured. The giant cells may slough off, after which the skin scars over. With a moderate number of warts, the fish shows little loss of vigor and the disease is probably self-limiting. It runs its course and is finished. Probably, though, the loss and break down of the giant cells is the occasion for the release of large quantities of active virus.

The spread of the disease in nature is not well studied, but we may judge how it happens from laboratory experiments with aquarium fish and even from the pattern of distribution of the warts. Free virus in the water probably attacks the connective tissue of the fish when the skin surface has had minor injuries. The warts, even large ones, are superficial, probably never invading the muscle except through access to a deep wound. There are records of lymphocys-

tis cells around the gut, heart, etc., but these cases are exceptional and the cells are few rather than gathered as warts. Warts are most common on the exposed parts most vulnerable to abrasion—fins, gill covers, lips, etc., and a given fish may have from one to dozens of such warts.

Under the microscope, lymphocystis cells are striking in appearance (Fig. 3). In extreme cases they may be as much as a millimeter in diameter (a hundred times the diameter of normal cells or a million times the volume). Each cell has a tough capsule or shell around it. The nucleus is as gigantic as its cell, and the cytoplasm shows a pattern of heavily staining bodies which are clumps of the virus which induced the cell growth and which may transmit the disease to new fish. The combination of great cell size with these peculiar cytoplasmic bodies led to various mistaken interpretations. The lymphocystis cells have been thought to be parasitic protozoa or even parasitic eggs. However, Dr. Weissenberg, working first in Germany and now in Philadelphia, got evidence both of a virus as the cause and of the development of the large cells from individual fish cells. With a million-fold growth of the cells, even without any multiplication, a lump as big as a cherry may come from a tiny patch of fish skin. This is not at all like a true tumor where the growth depends on cell multiplication. The size of a wart, then, depends both on the number of fish cells originally infected, and on the time they have had to grow. Isolated single cells may be found, but more often there are scores to thousands in one spot. Generally all the cells of one wart are of about the same size; they were probably infected at the same time. Since we may find two adjacent warts with different cell size, it would seem that one infection does not give immunity.

The above description of "lymphocystis disease" fits most of the fish species which have it. Yet almost surely it is not one disease, but a family of similar virus diseases adapted to different hosts. It has been fairly easy to transmit the disease experimentally within a species, but remarkably difficult between different species. Twice this has been done between related species of fish. And in nature the disease is now known in three groups of species: In the various flatfish mentioned above; in the perch group of our lakes and in several species of sunfish from the Schuylkill in Pennsylvania. It may be guessed in these cases, either that a single not-too-fussy strain of virus covers the mixed population, or that there has been rather recent evolution of the virus strains adapting them to related hosts. The vast majority of fish species has not been shown to be susceptible.

Some years ago an attempt to get more information about the warts on walleyed pike brought out two interesting points: Although the walleye was the only recorded host of lymphocystis disease in our lakes, fishermen also knew of warts in the related blue pike and sauger. We now have specimens from them as well as from the yellow perch in Lake Erie. Secondly, careful inspection of hundreds of warts showed that not all of them were of the large-celled lymphocystis type—many from Oneida Lake more nearly resembled true tumors or sarcoma of the skin.

Skin Sarcomas

The skin sarcomas of the Oneida walleyes are remarkably like lymphocystis warts to the naked eye. A hand lens is needed to distinguish them from the large-celled growths. They tend to be firm to the touch and more variable in color, depending on blood supply and on how much fibrous tissue is laid down by the multiplying cells. The microscope also shows variations from benign fibrosarcomas to patterns of rich cellular proliferation which look malignant. (Actually, in these, as in most fish tumors, we have no good evidence for "metastasis"—the spread to other parts of the body through blood or lymph channels. The multiple sarcomas seen on these fish are just as likely due to a multiple response to the unknown stimulant.)

The distribution pattern of these sarcomas is not unlike that of the lymphocystis warts, although there are fewer on the fins and more on the body skin. In one good-sized sample of warty fish from Oneida Lake about half the warts were sarcomas. Some fish had only lymphocystis, some only sarcomas, while a fair proportion had both. Occasionally one apparently multiple wart may have a segment of each type (Figs. 2, 3). There is no intergrading of cell types, and since there are fish "pure" for each type of wart it is doubtful whether the lymphocystis virus is a stimulus to true tumor production.

There are some interesting questions here. However, we know of no other species with these two types of warts and the adult walleye is scarcely a convenient laboratory fish.

In any event, pikeperch fishermen can relax. The warts, whether lymphocystis or sarcoma, are harmless to man.

Federal pollution control fund

In recent Congressional action, the Senate passed the Labor-HEW appropriation bill to continue the water pollution control programs of the Federal Public Health Service at the rate of $50 million per year. Under the law, grants can be approved only for municipal projects that fit into a state-approved "comprehensive" pollution abatement plan.

Other water-pollution control funds—$3 million for program grants to state and interstate agencies and $3½ million for research, technical assistance, administrative costs and enforcement under the Blatnik Act, were voted by the Senate exactly as previously approved by the House.

In New York State, real progress under this program is being made. During 1956-57 the State was allocated just under $2¾ millions for this work. The State has until June 30, 1958 to obligate these funds. The first applications for assistance were received about January 1, 1957 and to date 60 of them have been recorded. Of these, 37 were in form that could be processed by the State Water Pollution Control Board. After evaluation and analysis, 24 projects were finally selected with combined total costs of $13¾ millions. Twenty-one of the 24 projects have been acceptable to both the State Board and the muncipality concerned and formal requests for financial aid made to the Federal Public Health Service. To date, five communities have been authorized to actually award contracts.

It should be noted that final selection of projects is dependent on several factors. For instance, Federal aid can be granted for sewage treatment facilities but cannot be granted for sewage collection systems, and 50 per cent of the Federal aid money must be allocated to approvable projects in communities with populations of 125,000 or less. Also, Federal aid is limited to 30 per cent of a project's cost or $250,000, whichever is less. It is interesting to note that 85 per cent of the Federal aid in 1956-57 will go to communities of less than 125,000 population. The Board has applications for two projects each totaling over $2 million and one for $1½ million. These projects, if approved, could only expect to receive $250,000 each in Federal aid.

For 1957-58, beginning July 1, 1957, New York State has been allocated $2,746,550. At the present writing it is understood that any funds not expended from last year's allocations, will be carried over for future use.

Ducks Down the Drain

by Philip Barske, *Field Representative, Wildlife Management Inst.

Three million waterfowl rotting in the marshes, along the shores of lakes, bays and ponds, in the sloughs and down the river bottoms of this country! Is this some waterfowler's nightmare? It's that, but worse than that—it happens! It happened during last Fall's season; it will happen this Fall; it will continue to happen unless, and until, the waterfowl hunters in this country take action to reduce this frightful waste.—EDITOR

DURING the hunting season of 1955-56, the U. S. Fish and Wildlife Service made an intensive study to determine the total shooting kill of waterfowl. The tally amounted to 15,152,200 ducks and 906,635 geese for a total of 16,058,835 birds. These figures include both retrieved and non-retrieved birds. The non-retrieved portion added up to 3,070,964 birds—dead and crippled birds left in the marshes and sloughs! These figures for waterfowl cripple losses are not picked out of the air. Originally, cripple losses were guesses, but the recent studies by state game departments and by the U. S. Fish and Wildlife Service provide an accurate, if dismal, picture. Over the years, these surveys show that the national average waterfowl crippling loss is at least a disgraceful 25 per cent.

This annual waste is cutting drastically into our breeding stock and into our harvestable crop. It's poor business and poor sportsmanship to allow a fourth of the total annual waterfowl kill go down the drain because of carelessness.

Moreover, these figures from state and Federal studies report only birds knocked down within sight of the observer and not retrieved! But that's not all. X-ray work by William Elder of Missouri and Jim Jordan of Illinois indicated the amount of lead thrown at waterfowl. In a study of 3,638 adult dabblers in Manitoba and Saskatchewan, Elder found by X-ray examination that one of four drake ducks was carrying body shot. Jordan, in Illinois, on a study of 1,700 birds, found that adult ducks showed an incidence of 35 per cent of body shot, whereas, juvenile birds indicated a level of 14.5 per cent carrying one or more shot pellets! In other words, we have a staggering number of waterfowl that have been mighty close to death's door.

Why such a staggering loss? How can it be reduced? Simple questions, but they involve a mighty tough factor to work with—the human being.

Crippling loss stems from three basic elements—the human, the gun and the target. If there were perfect understanding and co-ordination between gun and man, the loss of cripples would be within reason. What is reasonable, as crippling loss, is debatable but it certainly shouldn't be 25 per cent of the total kill. We always will have some crippling in all forms of shooting—it's inevitable—but as sportsmen and conservationists, we must cut this loss to a minimum. Primary responsibility for this waterfowl wastage rests with the gunner. From there on we can speak only of basic issues—trigger-happy shooting, failure to use retrievers, inability to judge distances, inability to judge the effective range of a load, poor marksmanship, pre-dawn shooting, type of shooting, population available, period of season, not killing cripples immediately, type of cover, weather conditions and an endless number of other reasons that contribute to the loss of birds.

To sum up, the number of waterfowl crippled can be correlated with attitude and proficiency of the hunter, his equipment and the gunning conditions under which he shoots. Of these factors, the hunter's personal attitude governs the number of dead and crippled waterfowl he leaves behind him to such an extent that other factors become trivial.

In a Pennsylvania study, Randall found that novice hunters have a higher crippling loss than the average or veteran hunter owing partly to such causes as shooting at out-of-range birds and using inadequate shot loads. The cripple loss by the average and veteran hunter were reduced by more than 40 per cent when retrievers were used.

Few of us go through a season without having cause for self-reproach over unrecovered crippled and dead birds. Even if we are indifferent to the humane aspect, we cannot ignore the fact that it is idiotic to allow at least one-fourth of the total annual waterfowl kill to be wasted! Maybe a rundown on some of the causes of crippling will strike a chord of self-reproach in us, and when the same situation arises this Fall, possibly we will check ourselves in time to become a statistic reducer and a duck saver.

Trigger-Happy Shooting

We've got this in every type of hunting. Just how it affects us is hard to describe but I confess I go through a stage of it more often than I care to admit. You are the only one that can change that; think it over.

Inability to Judge Distance

This undoubtedly is the greatest single cause of avoidable loss. Just why this occurs with gunner after gunner involves psychology and lack of shooting experience. Shooting at birds out of range probably is the greatest single cause of avoidable loss. Why is this done? Probably because the hunter simply cannot judge distance. If that is the case, he should pace off and put a marker at thirty yards (consistent killing range), 50 yards (near maximum consistent killing range) and 70 yards (out of consistent killing range). Just as a man becomes intimately familiar with his automobile and the maximum speed it will endure, so must he recognize that his gun also operates within limits. The hunter who shoots at all out-of-range birds and occasionally bags one is not demonstrating skill but mere ignorance in the proper use of his fowling piece; the "sky shooters" cripple more ducks than all other hunters put together. A real sportsman waits until the bird is well within range so that if one is crippled a quick second or third shot will help erase the blunder of a partial hit. The extra shot carried in many duck guns should be reserved to rake a cripple the moment it is down.

Poor Marksmanship

This hits us where it hurts! For ten months, old Betsy sits mouldering in the cabinet or in a damp gun case, and then on the legal hour of the opening day we proceed to do our practicing on live birds. We have just enough feel to get the birds in the outside pattern and do our damage. One Federal official, who has observed gunners in the field for many years, said that many of the cripples of the first few days are caused by "good" gunners, but "good" gunners who haven't shot since last season and consequently the first day out often becomes a "sighting-in" time that costs plenty of lost ducks.

Ability to Judge Properly the Range of Modern Shells

Here is a matter that can become a real issue. Our modern shells are hard-hitting, but they are not radar-guided, nor does the man who purchases a box of long-range shells automatically acquire the skill that is needed for pointing the gun for that kind of shooting. A fundamental knowledge of the proper range and killing power of the shooting equipment still is basic. Even with the gun loaded with long-range shells, let's remember that in long-range shooting the lead is the thing and that it's mighty important to have at least three to five pellets of number six chilled shot to kill cleanly. Of course, that's dependent upon the size of the duck and the location of the pellet penetration. Long-range shells have made real contributions to good sport when used intelligently. The numerous devices that make a garden spray of a scattergun must come back to reality and should not imply killing at foolish ranges.

Failure to Retrieve Birds

The failure to retrieve birds may range from the lack of a retrieving dog to just downright piggishness, in cases where birds are shot just for target practice or where a fellow is too lazy to exert himself to pick up a downed bird. Many shooters do not own or use dogs and must rely upon their own resources to retrieve. All is well and good if the bird is stone dead and water conditions are such that either boots or a boat can be used to pick up. The gunner shooting over deep or tidal water without boat or dog to aid in retrieving is a heavy contributor to the cripple loss. It takes will power to shove out after a downed bird and especially when the "limit" still is to be reached and there is danger of flaring any incoming birds.

Laws designed to protect the birds may add to the cripple loss. The present law does not allow shooting from a motor-propelled boat and this frequently is a hardship on a gunner who wants to pursue a wounded bird. To be able to have the necessary speed to chase a wounded bird is an important factor in bird recovery and also, in the initiative of the individual to go out. This regulation merits further consideration and it's up to us to develop the solution. The Atlantic Waterfowl Council at its May, 1956, meeting unanimously supported a resolution that power boats be allowed to retrieve cripples within a 200-yard radius of the shooting position or blind.

(*Continued on page 33*)

The Chemistry of Fall

by Richard B. Fischer,
Associate Professor, Conservation Education, Cornell Univ.

Our back cover in this issue presents a leaf mosaic in Autumn colors, seasonally characteristic of many of our native species of trees.

NATURE holds many secrets and the most closely guarded are those nearest to life itself. One of the most mysterious — and spectacular—of plant life processes is the annual Autumn splendor of the dying leaves. Investigations have revealed a few clues to the color changes in leaves, but the greater mysteries of exactly why and how remain unsolved.

Through the microscope, scientists have discovered some of the workings of plant life which cause leaves to change color. They have seen that every leaf is made of hundreds of thousands of tiny, living cells—like hollow, thin-walled bricks filled with water. And inside each cell are blobs of colored chemicals. The green chemical makes leaves green. And this green substance is the only thing known to man, which, with the help of light, turns water and carbon dioxide (the same gas that puts the "fizz" in soda pop) into sugar—food! The life sustaining magic of this green substance is still puzzling scientists.

Blobs of yellow and brown chemicals are also contained in the cells of green leaves. But these don't color the leaves until the green chemical disappears.

People used to think frost caused Autumn colors, but we now know that green leaves get ready for the color change long before Jack's arrival. Mature leaves have a "cutoff" zone which you can see at the base of the leaf stem where it joins the twig. A tiny furrow or a different color marks this separation layer of cells. Some of these cells slowly disintegrate and dry out. As they do, they choke the tubes that carry materials in and out of the leaf. Before the leaf falls, all the "pipes" to the leaf are pinched closed and sealed.

All Summer these open tubes carry materials to the leaf to replenish the green, food making chemical as it is used up. Then in Fall, as the tubes close up, the leaf gets fewer raw materials and the green chemical is used up faster than it's replaced. With the green substance disappearing, the yellow substance becomes visible. Soon the green is gone and the leaves are yellow. You've seen this occur in corn, aspens, elms and birches.

Clogged tubes also keep sugar, made by the green chemical, and wastes from leaving the leaf, and this favors production of a new substance which makes our most spectacular Autumn displays of reds, blues and purples. The color of this substance depends upon the liquid in the cells of the leaf. If the liquid is acidic or sour, this new substance turns red and colors the leaf as you see it in red maples, some oaks, sumacs and even in the skins of some apples. Where the cell liquid is alkaline, as in some grape skins, ash leaves, dogwoods, gum trees and some oaks, this substance ranges in color from blue to purple. Since the color of this substance depends upon the condition of the liquid in each cell of every leaf, the endless variety in an Autumn landscape is not surprising.

Plant scientists have learned that bright days and cool nights favor a colorful Autumn. As the pipelines to the leaves are closing up, bright days stimulate the remaining green chemical to go right on making sugar. And cool nights —around 40 degrees—close the tubes faster, holding the sugar in the leaves and keeping out the raw materials for replacement of the green substance. An early frost actually spoils the Autumn beauty. It kills the leaves before their separation layers develop, so they turn brown and may stay on the trees long into Winter.

Finally the separation layer is complete and a slight breeze sends the dead leaves drifting earthward. As they decompose, leaves return to the soil the life-giving elements that mysteriously produce the kaleidoscope of color that has delighted and fascinated man through the centuries.

Editor's note: This article is adapted from Nature's Autumn Mystery *which appeared in* Ford Farming, *Fall issue, 1956.*

the back of the book

Deer harvests

In most of the major whitetail deer States game management specialists report they are faced with the same problem: Too many deer for the available range. Most of the States are making progress for more adequate harvests by antlerless deer seasons.

A study by the U.S. Fish and Wildlife Service yields some interesting information for the 1955 deer seasons. Pennsylvania harvested 86,155 deer from an estimated population of 300,000 or 28.7 per cent; Maine, 35,583 from 180,000 or 19.8 per cent; Minnesota, 63,945 from 400,000 or 16 per cent; New York, 59,532 from 387,500 or 15.4 per cent; Michigan, 71,120 from 600,000 or 11.7 per cent; Texas, 43,425 from 450,000 or 9.7 per cent; and Wisconsin, 35,000 from 600,000 or only 5.8 per cent.

Game Managers seem to be reasonably well agreed that approximately one-third of the total population may be harvested and still maintain a sustained yield in average whitetail deer range.

In 1956, with a broad antlerless deer season, New York harvested 72,315 deer from an estimated population of 361,000 animals or 20 per cent. It is interesting to note that this harvest, the best in the history of the State, fluctuated from a take of 9,811 animals from an estimated herd of 127,000 in the Adirondack region or 7.7 per cent to 25,282 from an estimated population of 130,000 or 19.4 in the Catskills region, to a record 37,222 from an estimated population of 104,000 or 35.8 per cent in the Central and Western region.

Heresy on the watershed

The time is coming, and perhaps sooner than we expect, when our sanitary and water engineers will be putting to work nearly every gallon of water the weather man can bring. Foresters and wildlife workers will still practice their fine arts of managing trees, fish and ducks, but their minds will constantly be jammed with thoughts of whether this technique or that is also serving its function in water conservation. In the meantime we have much to learn and notes like the following may not take us quite so much by surprise.

An article by B. C. Goodell and H. G. Wilm in the 1955 "*Yearbook of Agriculture*" essentially states that *the water yields from a heavily forested watershed can be increased by clearing.* Those of us who have been taught that forest cover means good water supplies and who have noted the thousands of acres of pines and spruces planted around the various reservoirs in the State, probably raise our eyebrows a little at this. Actually the gentlemen are reporting on something which is the product of sound observation, thinking and experimentation; a fine piece of imaginative and practical research unfettered by preconceived notions and folklore.

The gist of their findings revolves around dense stands of conifers, the Winter snow-pack, and that dry Rocky Mountain climate where winds like the Chinooks practically eat up the snow before them. Here it was found the creation of breaks in the solid stands of pine permitted more of the snow to reach the ground and add to the snow-pack instead of being held up in the branches subject to evaporation or more strictly sublimation (change from a solid direct to a gaseous state). Meanwhile the surrounding conifers functioned as windbreaks protecting and conserving the snow-pack for the warm weather melt. Stands of hardwoods among the conifers acted similarly to clearing since, in their bald Winter state, they permit more snow to fall directly to the ground to become part of the snow-pack.

While water supplies are not yet that critical in the Northeast, the potential 10 to 20 per cent increase in the amount of the snow-pack that can be obtained under some situations should give us pause for thought. Perhaps more extensive opening up of conifer plantations, a good wildlife management practice anyway, and greater use of conifers in edging strips rather than blocks would put our State in the ranks of the more foresighted water conservators.—DIRCK BENSON, *Game Research Investigator*

The beaver and McNary Dam

The McNary Dam in Oregon is one of the larger man-made water impoundments.

A short time ago a beaver spent nearly a week attempting to repair what he thought was a "leak" in the huge structure.

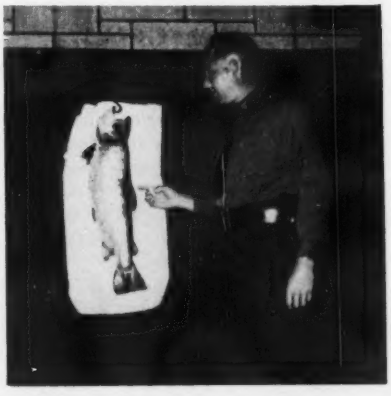
It wasn't a leak at all, but the dam's navigation lock, and of course it defied the poor beaver's most earnest efforts to make it behave.

The beaver, somehow named "Joe," finally gave up, packed whatever tools beavers use in their work, and swam sadly off downstream.

This one beaver failed, but it shows that beavers have a good spirit and that when they think something has gone wrong they're willing to pitch in and try to make it right—even if they can't be held responsible for the original work.

Pheasants in the afternoon

Iowa pheasant hunters—under regulations set by the Fish and Game Commission of that State—are permitted to shoot only in the afternoon; 12 to 4:30 o'clock during the 1957 pheasant season, November 9 through December 2.



They didn't catch 'em all

Robert Molyneux found a dead brown trout on July 28 in the Redfield Reservoir in Oswego County. Mr. Molyneux turned the trout over to Game Protector Mattison and, after examination by Department biologists, it was determined the trout was 31" long, weighed 15 lbs., 8 ozs., and was approximately 10 years old. As far as the biologists can determine, the trout had died of *old age.*

Ducks Down the Drain

(Continued from page 31)

Failure to retrieve birds can't be passed over without a few words about the "eatin' ducks." How many of our smaller and "inferior" ducks are knocked down before the legal limit of "good" ducks is obtained? No one writing about ducks, sportsmanship, or laws can change many attitudes or individual levels of sportsmanship. Each of us must decide whether, in the pursuit of sport, we are justified in shooting ducks that will be wasted for the sake of getting a few.

Type of Shooting

The various agencies interested in reducing cripple wastage have facts that show the effect of different types of shooting on cripple loss.

Pass shooting: The highest degree of shooting ability is necessary for successful pass shooting and unfortunately, this type of shooting attracts many of the inexperienced gunners and thus results in the highest cripple loss.

Decoy shooting: This is the favorite type of shooting method and is best suited for the average gunner. If a gunner is conscientious, and is backed by a dog, the cripple loss can be held quite low; again dependent, as is all other shooting, on weather and water conditions.

Jump shooting: This type of shooting is a favorite with many gunners and both by the nature of the sport and the situations usually encountered, cripple loss is relatively light.

Henry Davis of the Remington Arms prepared a yardstick for scoring and states that a good gunner will score 50 per cent on pass shooting or over tall timber; 75 per cent when shooting over decoys or jump shooting.

Period of Season

Most studies indicate that early season cripple loss is the most severe. We can attribute this peak loss to several factors; many of us know some secret ones of our own. As the season progresses, the vegetation becomes sparser, the birds are easier to find and also, the gunners who persist usually are dyed-in-the-wool shooters who know how to point and swing a gun.

In many aspects of the whole waterfowl problem, there are comparatively few things that we can do as individuals to help waterfowl. Nevertheless, as far as cripple and dead bird losses are concerned, one of the best ways in which we can help to reduce this tragic loss is to readjust our sights and our standards of sportsmanship. As individual gunners, our greatest responsibility and obligation is to ourselves—to make ourselves believe and feel like real sportsmen. It's a feeling that we all know and one that most of us have experienced at times. It's a nice way to feel.

In discussing ideas and philosophies, I often think of the article written by the late H. P. Sheldon in *Country Life* (1940), for it illustrates the point: "I feel that I have an extra moral privilege to speak frankly on this subject, for in the past, I, too, have fired long-range cartridges in a long-range gun at a long-range duck who had nothing to lose but his life or his splendid gift of flight. He had, perhaps, burst his shell beyond the Arctic Circle on a night when the Northern Lights were sweeping long fingers of cold mysterious fire across the firmament. The Great Slave Lake, the Touissant Marsh where the slow stream of that name empties into Erie; Currituck Sound; and canebrakes, bayous and piney woods of the Deep South, and a winter on a shallow coastal lake in Louisiana. Then northward again to the Circle with a mate, and southward again, until one morning on Mattamuskeet a far flung pellet of number four shot smashed the delicate articulation of his right wing and brought him down to skulk helplessly amid the cattails until a mink found him finally. We're not cruel, but we are damnably thoughtless."

*For Atlantic Waterfowl Council Information and Education Committee.

Saints and sinners

The bobcat is neither a "saint nor a sinner" according to a study conducted in Alabama, the Wildlife Management Institute reports. The stomach contents of 145 bobcats collected between 1947 and 1954 were examined by biologists of the Alabama Department of Conservation and the Alabama Co-operative Wildlife Research Unit to provide a clue to the cats' eating habits.

The findings were that "rabbits provided 65.1 per cent of the volume of food for bobcats during the year. The rabbit was the bulk of the food for the cat in every month of the year.

"Deer provided 14.5 per cent of the food, with most of it eaten in January and February following the hunting season. Since deer meat was found in bobcats' stomachs from May through August, it appears that the cats are feeding on dead or wounded animals. Other foods were in 'trace' amounts.

"These eating habits," authors James R. Davis and Arnold O. Haugen concluded, "put the bobcat in both good and bad brackets. Certainly, he is not as 'black' as often painted."

Field Dressing a Deer

(Continued from page 18)

neck to a point between the ears, just back of where the antlers would be if it were a buck. Skin out the entire head, leaving the antlers on the carcass. Next, saw off the top of the skull, leaving the antlers attached to a one-half inch bony plate of the skull. Remove the rest of the hide from the body.

Salt down your hides with lots of salt. Leave over night. Scrape off the old salt which draws most of the moisture out of the hide, then re-salt them heavily, using at least 10 pounds of salt. Roll up your hides and ship them in a moisture-proof box together with your antlers to your taxidermist, complete with full instructions. *The law requires that you attach a tag to the head bearing your big game license number, your signature, address, the number of points on each antler and the name and address of the taxidermist to whom consigned.*

—Nick Drahos

Police officers deliver fawn

We occasionally read of police officers assisting in the delivery of human babies while rushing the mother to the hospital. Now we have a report of stork service for a deer.

It happened in June this year in Oneida County where Deputy Sheriffs Beressi and Luker were called to the scene of a collision between a doe deer and an automobile. The doe, which was carrying young, was so badly injured it had to be destroyed but the officers with the aid of a hunting knife and artificial respiration brought a healthy fawn into the world.

Dubbed "Lucky," the fawn was doing well, at last report, at the Conservation Department's Three Rivers Game Management Area near Syracuse.

Waterfowl mystery solved

Sylva, delightful publication of the Ontario Department of Lands and Forests, frequently reports on the disconcerting uncomplicated thinking processes of schoolboys. Its latest gem seems to solve one of the more intriguing scientific mysteries that has long baffled waterfowl experts.

An excerpt from a teacher's report revealed that this examination question —"In the fall, why do wild geese fly south?"—stimulated this very logical answer: "Because it is too far to walk."

Life would be much easier on all of us if we could all think as clearly as the schoolboys . . .

Wetlands, Water and Wildlife

(*Continued from page 15*)

nately, little can be said for accomplishments to date. Toward the east end of the Island, Quogue Sanctuary with 16 impounded acres under State control is but a drop in the bucket compared with the areas which should be set aside, either through public or private control. A goal of at least 10,000 acres of good salt marsh to be preserved as waterfowl habitat and shooting grounds is not too much to aim at in this region of great waterfowling tradition. We should also make a definite effort to show the various other land-use agencies how they might include certain conservation practices for wetlands in their programs, to the benefit of everyone.

Such is the status of waterfowl management on State lands in New York. We've made a start but our accomplishments are far from adequate when one considers the important position of the State in the Atlantic Flyway; the increasing number of hunters seeking recreational opportunity; the speed with which marshes are being despoiled by filling or pollution. The following table listing game management areas and showing the wetland acreages of each makes poor reading for waterfowl:

GAME MANAGEMENT AREAS HAVING SOME WETLANDS *

Game Management Areas	Total Acreage	Water or Wetland Acreage
Howlands Island	3200	300
Hanging Bog	3496	200
Happy Valley	8119	300
High Tor	2853	200
Cicero Swamp	3624	200
Oak Orchard	2259	1000
Rogers Island	270	200
Vischers Ferry	600	300
Au Sable Delta	640	350
Wickham Marsh	273	208
Perch River	4674	3670
Quogue	238	16
Lake Alice	700	350
Three Mile Bay	1437	1200
Mud Lake	326	250
Oneida Lake islands	3	1
Three Rivers	2513	120
Tioughnioga	3579	60
Partridge Run	4016	60
Totals	42,820	8,985

* The eight other game management areas in New York have little or no wetland acreage.

The Small Marsh Program

One very happy facet of our wetlands picture is the small marsh program which has been the subject of feature articles many times in this magazine. Total wildlife marshes constructed are now approaching the 1,000 mark, but there is room and need for many more. While the small marsh program was originally billed as being chiefly for waterfowl, there seems little doubt that it's even more valuable for water conservation and watershed control. Moreover, these small water areas function as wildlife community centers for all manner of upland game.

Year by year, more is learned about proper small marsh construction—where to locate the marshes for maximum duck use; how to build to assure minimum future maintenance; how to manage them to maintain maximum productivity. Meanwhile the program has brought about closer work and understanding with the Soil Conservation Service. That organization, with its primarily agricultural outlook, and the Conservation Department are blending their efforts to the benefit of the whole State.

Summary

The Wetlands Management Program for Waterfowl has two direct parts—the acquisition, preservation and development of large water areas as refuge, breeding and public hunting grounds and, secondly, the wildlife or small marsh program to increase waterfowl propagation but of high value too, as recreational areas. Progress on the first phase has been only fair—capital expenditures for land acquisition should be stepped up sharply even if the land must, through lack of funds, lie undeveloped for a few years. The opportunity for land acquisition is disappearing rapidly. If action isn't taken soon we will have awakened too late—with too little. There is absolutely no room for smugness in our present rate of progress.

The wetlands management program has other important phases. Foremost is pollution abatement in which steady progress is being made. Other objectives include planting and engineering projects to retard and control the rate of water run-off. Lacking in the program to date is adequate education to make the public realize that often the draining or filling of wetlands areas in hope of personal gain very frequently brings personal loss and loss to society as well.

Plentiful, clean water is essential to our National welfare and it is needed whether it is stored in reservoirs, lakes, ponds, marshes or in the underground basins.

—Dirck Benson, Don Foley

The hard way

Soil erosion because of rain is a problem that farmers face the world over.

In the Vosges Mountains of France, good topsoil is washed down to the valley below every year. At the end of the growing season, the farmers get out their shovels, go down to the valley, put the soil into baskets, and then carry it up the mountain on their backs, so it can be replaced!

Seems as if they're doing it the hard way. It's a whole lot easier to keep the soil where it belongs in the first place, by using the right soil conservation measures.

Here in New York State technical advice to agriculturists is available on how to slow down the raindrop—by contour strip cropping, drainage ditches, stream improvement programs, and planting cover on land that can't be cultivated for one reason or another.

Bear Brook trail

A new foot trail has been constructed on the East side of the Carry Falls Reservoir on the Raquette River by the Conservation Department. This trail is in the Town of Colton, Macombs Purchase, Great Tract No. 2, Township 8, Lot 30. The Bear Brook trail will eventually provide access into the Jordan Lake and Jordan Burn areas.

About one mile of the trail will be completed and marked with trail markers this year, in time for the big game hunting season. There will be a trail sign at the landing on the east side of the flow where the trail begins.

Camping permits for the area are issued by Ivan Ford, Ranger at Colton.

4-H

A few of the 4-H boys encamped this Summer at Cornell's Arnot Forest are instructed in forest management practice by Prof. Fred Winch, Extension Forester (extreme right).

Fifty-four 4-H boys from all parts of the State spent a week at the Forest this year studying forestry, wildlife and soil conservation.

Bath hatchery restored

The Bath Fish Hatchery was destroyed by fire on December 21, 1955 as reported in the February-March, 1956 issue of THE CONSERVATIONIST. A considerable number of trout eggs and fry was lost but replacement was possible on all but the lake trout eggs. While there was some shortage of lake trout for stocking during 1956, the over-all production of the hatchery was not affected. Temporary troughs were set up to handle eggs and fry. All outside rearing facilities, ponds and races were in no way damaged by the fire.

Plans for a new hatchery building were prepared under the direction of our Engineering Unit and bids were opened August 7, 1956, Construction started shortly thereafter and continued through the Winter with completion early in the Summer of 1957. During construction, facilities for setting up hatching troughs on the ground floor were provided and with other temporary troughs on the outside, eggs for the 1957 season were cared for.

The new hatchery building is of brick and tile construction, 39′ x 85′, being very modern and functional in every respect. Nineteen concrete rearing races were constructed on the floor of the hatchery room and these serve also as hatchery trough supports. After eggs are hatched and fry ready to feed, the troughs are removed and stored upstairs by an electric conveyor. The races are then used for rearing purposes thus utilizing the hatchery building on a year round basis.

The new building also contains an office, small laboratory, and work shop on the first floor. The second floor of the building is used principally for the storage of equipment.

The new building is located about 100 feet south of where the old building stood and on higher ground, making it possible to reuse the water in the rearing pond system. The old hatchery site was graded and black topped to provide additional parking space. The total cost of the new development including interior equipment approximated $100,000.

Bath Hatchery is the second largest producing unit in the State averaging over 60,000 pounds of trout yearly and incubating up to 7,000,000 trout eggs for use at Bath and other hatcheries.

The hatchery year

The 1956-57 fiscal year was a record breaker for the Department's hatcheries despite some rather serious disease epidemics. Our production amounted to 507,787 pounds of trout and 37,340 pounds of warm-water fish for an overall production of 545,128 pounds. This is the first year our hatchery system has exceeded 500,000 pounds of trout.

The Randolph hatchery started the year over 33,000 pounds in the red and made this up plus nearly 2,000 pounds by March 31st. Actually we produced over 540,000 pounds of trout during the year so our estimate of 521,000 is a realistic figure to shoot for in 1957-58. We were favored with abundant water supplies at all our hatcheries this past year and the production at Rome and Catskill reflects this.

The State's average conversion (pounds of food:: pounds of trout produced) was 3.4 and this is commendable in view of the fact that it was 4.3 eight years ago. With continued improved feeding practices, a conversion of 3 or under is not at all impossible.

The summary clearly shows three hatcheries with outstanding production compared to previous years: Rome with 122,756, Bath 76,171, and Catskill with 66,837 pounds. These hatcheries exceeded their already high average yearly production by a substantial margin. As previously stated Randolph's production was very low due to making up shortages from the previous year. Adirondack, Johnstown, Lake George and Warrensburg showed considerable gain over 1955-56 fiscal year. All other hatcheries continued with about average production.—KEN NICHOLS, *Superintendent of Fish Culture*

The closing door

The Pacific Coast is not in much better shape than the Atlantic when it comes to public fishing sites, says George X. Sand in the April issue of *The Fisherman* magazine. Pacific ocean-front haciendas stand shoulder-to-shoulder there, all but divorcing California's 1,137,000 surf fishermen from the shores. The surfmen, incidentally, even though denied adequate access to the sea, last year swelled the State's economy to the extent of $177 million. They spent $156 apiece, as contrasted with the $91 for Atlantic and Gulf fishermen.

As early as 1951 California found itself confronted with the serious problem of insufficient angling access to coastal waters. Its population had doubled during the past two decades and now over 70 per cent of the state's 13,000,000 residents lives within 30 miles of the sea.

According to the well-known conservationist Seth Gordon, "Unless heroic measures are taken quickly it may forever be too late. Of the 1,130 miles of California coast line only 13.5 per cent is owned by cities, counties and the state. The beaches 'to the mean hightide line' belong to all the people of California. But unless they have access to the heritage, that which thus belongs to all will be monopolized by the few."

New York State faces the same important problem. The acquisition of public fishing access rights in the Marine District was one of the potential benefits discussed in a recent CONSERVATIONIST article on salt water angling license.

Applied conservation education

Teen-age campers at the Conservation Department's Catskill camp near De Bruce received an unscheduled lesson in conservation in August when they were called upon to save 16,800 trout (estimated value $20,000) when the dam of a rearing pond suddenly developed a leak.

Charles Fontana, foreman of the New York State Fish Hatchery at De Bruce, called for help and fifty-seven camp boys were rapidly mobilized to pass buckets of silt and stones to stop the rush of the escaping waters. In two hours the volunteer brigade had plugged the leak. By evening the water had reached its original level and the fish had been saved.

The De Bruce Camp is one of four operated by the Department in New York to teach conservation education to boys. They are sponsored to the camp by sportsmen's clubs, fraternal and civic organizations. This group of campers, taught the fundamentals of wildlife and fish conservation, had an unusual opportunity to put theory into practice.

Hibernation of frogs and turtles

Winter is a serious problem in the world of frogs and turtles. So is a very hot dry Summer. These cold-blooded animals have little or no ability to keep warmer or cooler than their surroundings; their body temperatures rise and fall with those of the places where they are. Few can endure long exposure to more than a degree or two below 32°F or temperatures above 100°F.

In the Winter those that live in water hide away beneath the ice of lakes, ponds and streams; those that live on land burrow under leaf litter and soil below the frost line. They do not eat and all life processes drop to a very low ebb. They "sleep" or "hibernate."

In times of Summer drouth and intense heat, when ponds dry up, some kinds of frogs and turtles dig in the soil or creep under logs and rocks for protection from the burning sun and to conserve their body moisture. Then they, too, become torpid. This is called estivation.

Frogs and turtles breathe with lungs, at least from Spring until late Autumn, just like people. They inhale and exhale when basking in the sun—faster on warm days, slower when it is cool. When imprisoned beneath the ice, often for months at a time, their bodily fire, called metabolism, burns lower and lower as Winter sets in, until it is reduced to a mere spark of life. Their hearts beat at long intervals and they crawl or swim, if at all, in slow motion. Very little oxygen is needed but that little is a matter of life or death. They secure it from oxygen dissolved in the water, not through gills, but, in the case of turtles, through the linings of their mouths and throats; or perhaps, as in the case of frogs, through their skins.

Food is no problem for these Winter sleepers. Apparently they require no more nourishment during a hundred days of hibernation than they do during a day or two of normal activity in Summer.

In Autumn, most turtles bury themselves in the bottom mud of streams and bodies of water, or crawl into the submerged entrances of muskrat burrows, or hide under sunken logs. Only the box turtles hibernate regularly on land—burrowing deeper and deeper in soft soil as the nights become colder.

Spying on the ducks

For the first time since 1952, the Department's waterfowl biologists will conduct an aerial survey of the waterfowl migration through New York State. The survey will be conducted every two weeks beginning October 1 and continuing through mid-January, using the Department's light observation 'plane and two trained biologists as Pilot and Observer. Information secured will be valuable in support of Department recommendations to the Federal Service for establishing future waterfowl seasons and bag limits.

The last full scale survey in 1952 provided information on the buildup of ducks and geese in the State during the hunting season. Better zoning of Long Island waters was an important outcome of the last survey. It is time now to take another reading throughout the season to determine if any significant changes in the pattern of migration have taken place and how they may affect future season recommendations and management planning.

The airplane and its crew can cover in hours and minutes the thousands of waterfowl concentration areas in New York that would take days and weeks by many ground observers—and do it much more accurately.

This survey must be carried out at low altitude and the hazards to 'plane and crew are many, especially as the survey progresses into the bad weather of late Fall and early Winter. Experience has shown however, that the aerial survey has little or no effect in disturbing the waterfowl in any area. The birds may rise as the 'plane approaches, then wheel right or left and settle down again.

The survey crew has been instructed to use every precaution to avoid disturbing waterfowl gunners in the field. In turn, the co-operation of the sportsmen is requested in order that the survey may be a success.

The 'plane is a light Cessna 180, painted yellow to better locate it if it is forced down by accident. It carries the Number N-601 with Department insignia.

Underwater biologists

For many years the fisheries biologist was limited in his direct observations of fishes to the products of angling, a haul seine, the stunned fishes of the electric shocker or inadequate viewing from the surface. These methods have produced an immense amount of information for the biologist and fisheries manager, but now these men are starting to visit their subjects at home—sort of a person-to-fish interview.

According to a recent issue of *Skin Diver Magazine*, fisheries biologists in fourteen states now use S. C. U. B. A. diving in their fisheries work. One state uses the services of private divers outside the department and four others are considering applying this new tool in the near future.

S. C. U. B. A. equipment helps in spotting concentrations of fishes, the condition of underwater vegetation, the arrival and departure dates in marine waters of various species of migratory fishes and other information needed to better manage this resource.

Boy Scout Jamboree

(Continued from page 11)

and radio, under simulated conditions, to learn something of the skills of a fire warden.

Several 18" or 24" x 10'-logs from several sections of the country were set up so that Scouts could use increment borers, Biltmore sticks and diameter tapes to check tree growth and measure volume of standing timber (and incidentally, see how climate affects tree growth; how different species mature more quickly than others; and how forest management is employed to help nature grow trees faster).

A strong appeal was made to exterminate the litterbug on forest campsites, as well as other recreational and natural beauty areas, in the forest recreation demonstration. Actual examples of campsite vandalism and littering were brought in to point up this health and safety menace to recreation and the effect of poor outdoor manners on use of public and private lands.

In forest protection, insect damage was demonstrated through actual demonstrations of bark beetle damaged logs brought in from the West and other examples of insect damage from other areas. The use of fire tools also was shown, with boys handling them in a learn-by-doing demonstration.

The Staff

Staffing all these demonstration areas were selected personnel from twenty-four state, Federal and independent conservation agencies. One hundred twenty men who have had experience in teaching and in Scouting, as well as in their specialized technical fields, served as instructors. These men were recognized as part of the Jamboree Staff, and lived right on the grounds at Valley Forge, sleeping in tents as did the 53,000 Scouts.

Before the Jamboree opened, these men worked together to develop their "side show spiels" so that a unified and co-ordinated approach was presented. Thus, the inter-relationship of all resources was emphasized so that Scouts came out with a realization and an appreciation of the dependence of fish on soil conservation, for example, or the relation of good game populations to good forestry or good farming.

A large part of the success of the Jamboree Conservation Program was due to the help and co-operation of the New York Conservation Department. From the earliest stages of the planning two years ago, through construction of the demonstrations, and actual instruction during the Jamboree itself, New York State personnel took the lead. The imagination in planning and the untiring efforts in construction and instruction on the part of men from the Divisions of Lands and Forests, Fish and Game, Law Enforcement, and Conservation Education reflected the sincerity and dedication of purpose that these men hold for conservation and its importance in the future of the country.

Through their efforts and hard work under difficult conditions, 53,000 Scouts and leaders (3,900 of them from New York State) left with a deeper understanding that the wise use of natural resources must become a part of the way of life of all of us if the ideals and principles that made Valley Forge famous in 1777 are to be maintained.

It becomes more obvious each day that our way of life—our democracy—depends upon how we use and manage our natural resources. It is fitting, indeed, that it was at Valley Forge where our freedom was born, that this lesson in how to help guarantee its future could be taught. Staff men from the New York Conservation Department did a magnificent job in the citizenship training of the Jamboree participants.

In memoriam

It is a rare occurrence to find in one man a high degree of technical ability in combination with a keen business sense, plus a dynamic personality. All these qualities we found and enjoyed over many years with our co-worker and friend, former District Forester Walter F. Pratt.

Walter Pratt graduated from the New York State College of Forestry at Syracuse in 1927. After a few years with the Forest Service in the capacity of Blister Rust Agent, he became a District Forester with the Conservation Department and in February of 1932 he was assigned to Forest District No. 7 which at that time was comprised of St. Lawrence, Clinton and Franklin counties.

Under his able direction and leadership approximately 70,000 acres of submarginal farm lands were acquired in the District for reforestation purposes. In addition many miles of fishing rights were also acquired. During the period of the Civilian Conservation Corps and from 1946 until his death on November 27, 1956 he directed the reforestation of over 20,000 acres with approximately 25 million trees.

His many other activities included cultural improvement work in plantations and natural hardwoods, the construction of many miles of truck trails and fire lines and the over-all supervision of all other phases of forest management and recreation facilities in the State Forest program of the District. Mr. Pratt also directed the Forest Practices Act Program in St. Lawrence County, which expanded under his guidance to the present figure of 325 co-operatives with approximately 120,000 acres of private woodlands placed under good standards of forest management.

During the World War II years of 1942 to 1946, Walter Pratt served in the Armed Forces, rising from the rank of Private to that of Captain, serving much of the time overseas in the Engineer Corps on the Burma Front.

Walter Pratt was held in high esteem in his community and by his co-workers in the Conservation Department. The sparkle in his eyes and his gentlemanly conduct will remain with us always in our fondest memories.

Law enforcement—new look

According to a survey made by the Wildlife Management Institute of eleven western states only 48 per cent of a conservation officer's time was spent at law enforcement. The remainder is devoted to fish and game management, public relations, youth education and other related activities.

The Conservation Officer is oftentimes the Conservation agency's first contact with the public and he especially commands their attention because he is in uniform. His attitudes and knowledge can make or break an agency's program.

The Conservation Officer field could offer the largest potential job market for graduates of conservation courses in schools and colleges, and increasing consideration should be given in curricula on law enforcement in fish and wildlife management. In turn, the Conservation agencies could review their present requirements and continue to elevate their standards for and benefits to those who would choose this field of endeavor.

1957—a record year for Lake George landlocks

The landlocked salmon season opened April 1st, and that day—while it didn't top the previous record of 12 pounds, 12 ounces for the salmon Edward Sullivan of Glens Falls took out of Lake George, April 27, 1956—the 11-pound, 7-ouncer caught by Leonard Kilion of 1540 Altamont Avenue, Schenectady, was a noteworthy fish—at least for a day. April 2nd, Robert Farr of Corinth caught a 13-pounder to set a new record. Then seven days later (April 9) Robert Horn of Lake George topped Farr's fish with a 13-pound, 3½-ouncer. Horn was champion for only 19 days. On April 28, R. A. Berry, Jr. of 445 Fourth Street, Schenectady, came up with a 14 pound, 12 ounce landlock. (And we wrote this story for a third time.)

R. A. Berry's 13 lb., 3½ oz. salmon

We're able to say quite a bit about these four large salmon because sample scales were furnished the Department's Chief Aquatic Biologist, Dr. John R. Greeley, along with other pertinent data.

The 13-pound, 3½-ounce, 32½-inch long, 17½-inch girthed salmon, caught by Mr. Horn on a live golden shiner and officially weighed at a market in Lake George, had scales that "read" as 9 winters, 3-year stream type. It showed evidence of spawning mark on the scale and had made its best growth in its seventh and eighth seasons (1955 and 1956).

The 13-pound, 31½-inch long, 18-inch girthed salmon, caught by Mr. Farr on a live golden shiner, and officially weighed at a fish and game club contest, read 8 winters, 2-year stream type. It also showed evidence of spawning marks but made rapid growth in 1955 and 1956.

The scale sample from the 11-pound, 7ounce, 30½-inch long salmon, also taken on a live shiner, read 6 winters and seemed to show spawning mark at the fifth growing season with a fast growing season in 1956.

Berry's big fish—the 14-pound, 12-ouncer, 35½-inches long, 18-inch girth salmon was taken on a tarpon fly off Dome Island near Bolton Landing. This fish, a slow grower, showed 10 winter marks; with hook jaw typical of an adult male. Scales showed evidence of at least two breeding seasons. However, this salmon evidently did not breed each year after first maturity as some salmon do. It skipped a year after its 8th Winter and grew more rapidly in the 9th growing season. Quite a few Lake George salmon follow this pattern.

Indications are that all the other fish made rapid growth subsequent to slower years and showed evidence of previous spawning marks. They gave good indication of "skip" spawning, so called by Martin Pfeiffer, Aquatic Biologist, who, in the annual spawn-taking operation, has netted quite a few large salmon which were not mature and had evidently skipped one or more seasons. Some of these large fish, on the good forage fish situation in Lake George, put on weight fast; much faster than salmon that are breeding every year. The early growth of these fish would show they were either small yearlings when planted or could have been from natural spawning. From previous studies, however, the amount of natural reproduction appears limited so it's probable that these were small yearlings from our Washington County Hatchery at Cambridge.

This account may be out-dated when it appears in this issue, so rapidly have the records changed regarding big salmon taken from Lake George. But it justifies the confidence of our fisheries men that heavier and larger landlocks would be taken from that lake this season. In addition to the several salmon whose measurements are given above, many other very large ones have been taken. Although live bait accounted for many of the first fish when there was only a small amount of open water, artificial lures took many fine salmon later (including Berry's fish). Lake George consistently produces the earliest salmon fishing of any of our lakes.—R. B. MILLER

Price on the head

The Wisconsin legislature has recently repealed its bounty law on predatory animals. Previously the State had paid a bounty of $2.50 for each adult red or grey fox and $1 for each young fox; $5 for bobcat and lynx and $20 for wolves and coyotes. For the past two years the bounty payments had averaged $130,000 a year with no significant change in the predatory animal population.

In Michigan, bounties are still in effect with female wolves and coyotes carrying a $20 price tag (males $15); bobcats are worth $5 in the Upper Peninsula and the fox brings a $5 payment throughout the state. The bounty on foxes has been in effect since 1947 and according to field reports the red fox population has continued to increase. In 1956 the bounty system cost Michigan $209,000 from its hunting and fishing license fees.

The opinion, often expressed by game biologist, that a "price on the head" system merely trims excess predator production without disturbing the basic population still rings true.

Note: The most recent and one of the best reports that we've seen on the futility of bounty payments is contained in a Michigan publication, The Red Foxes of Michigan, *available upon request to the Michigan Department of Conservation, Lansing.—Editor*

From bark to topsoil

Anyone who has struggled to make things grow on land where the topsoil has been lost soon becomes an advocate of composting or may resort to some of the new chemical soil conditioners.

Of considerable interest is the progress of Armour Research Foundation scientists who have developed a new soil-builder which achieves in a short time, what Nature takes centuries to do in building topsoil. The discovery involves a method of converting the bark of trees into an inexpensive and unusually effective soil-builder. Each year tremendous tonnages of bark are made available by lumbering firms, pulp and paper companies with only a small part of it used, primarily as fuel.

Tests thus far with this product indicate that sand or clay soils can be turned into loamy topsoils, where plants will grow at a surprisingly rapid rate, in a very short period of time.

Web of motion

The Great Migrations, by Georges Blond, opens with: "Day and night, from one end of the year to the other, while we work or sleep or dream, even at the very moment when you read these lines, there ceaselessly recurs a mysterious planetary phenomenon, of which we are for the most part unaware. Millions of living creatures are moving through the air and land and sea, just as they have moved for hundreds of thousands of years, weaving around the globe a network of peregrinations, some of them six thousand miles long."

He dramatically describes the migration phenomena of wild creatures ranging from lemmings to wild geese; salmon to locusts. This 192-page book published by The Macmillan Company sells at $4.

More on Nutria

Personnel from the Denver Research Laboratory of the U.S. Fish and Wildlife Service will join forces with other Service employees from refuge and predator and rodent control branches in a quest to uncover a practicable means of controlling the nutria, according to the Wildlife Management Institute.

Known variously as a "swamp beaver" and a "king-sized muskrat," nutria is neither a muskrat nor a beaver. This South American rodent became established in the United States nearly 20 years ago and large numbers now inhabit the Southeast and Gulf Coast as well as the Mississippi River drainage. It also is established on the West Coast.

According to the Service: "The nutria is a vegetarian and as such is in direct competition with migratory waterfowl and muskrats for the natural feed in the marshes." Trouble is reported in many places, and nutria are consuming great quantities of duck potato, chufa roots, and other feed needed by wintering migratory waterfowl on the Service's Delta, Lacassine, and Sabine National Wildlife refuges in Louisiana.

"In some instances the rodent has been equally destructive of unwanted vegetation such as phragmites cane, but refuge personnel say their damage far outweighs any good they do," a Service spokesman said. Many cases are reported on the Delta Refuge of nutria decimating all vegetation over large areas in search of roots and tubers. Such nutria "eat outs" are common on the Gulf Coast marshes and Federal refuges in Louisiana.

Nutria brought into this country by fur farmers in 1899 apparently failed to become established. Others, maintained in an "escape-proof" enclosure in Iberia Parish, Lousiana gained freedom as an aftermath of a severe storm of 1939. These, and about 50 pairs released later, apparently are the progenitors of the millions now infesting the coastal country.

Trappers have been losing interest in the animals for several years because of the difficulty of preparing their low-value skins.

N.Y.S. law requires that a license be secured from the N.Y.S. Conservation Department before nutria may be imported into the State, held or propagated.

The bullfrog and the weasel

Game Protector Putnam of Fulton County was about to have a mess of frog legs.

One frog in his bag seemed especially paunchy. He opened the frog's stomach and found a half-grown weasel inside. The condition of the weasel indicated that it had just recently been captured by the big bull frog.

Such a capture must have been quite a tussle for both.

The decoy deer

During the deer season, the people living in the back country of the Adirondacks see many hunters; in fact, so many at times that traffic and parking on the narrow roads become a major problem.

Jack Kenny and his wife, of North Bay, were periodically beset with hunters who parked indiscriminately on or around their property. They decided to conduct an experiment.

They had an 8-point buck head that had been mounted some years back, and they used the head along with canvas, wood, and white cloth to build a model deer in the far corner of an adjacent field.

On the first day of the season, they counted 18 hunters that unloaded their guns at the dummy. A number of the hunters crawled on hands and knees half way across the field before shooting. Each day, at some personal risk, the Kennys marked the new bullet holes. At season's end, their deer had absorbed 5,000 hits.

Conifers and game

Recently, Cornell University, in cooperation with the N.Y.S. Conservation Department (P.-R. Project W-61-R), has been attempting to evaluate the relationship of conifer plantations and wildlife. Plantations were found to have little direct influence on wildlife until they reached a height of four feet, but when trees reach 10 to 15 feet they begin to attract wildlife, and at 20 to 26 feet the greatest variety of wildlife occurs.

Cottontails were found to be most abundant at the 6- to 15-foot stage, with pheasants using the edges where suitable pheasant cover is adjacent. Grouse begin to show interest at the 10- to 15-foot stage but were most frequent in the 15- to 40-foot plantations. Up to the 20-foot height the dense branches and snow accumulation limited plantation use by deer.

At the 20- to 26-foot stage, natural changes in the plantation such as self-pruning, the occurrence of undergrowth and natural openings occurring from failures, dead trees, and windfalls gave the greatest utilization to wildlife of all kinds. After this stage the canopy began to close in, shading out the understory and wildlife use began to fall off, with grouse and deer remaining the longest. Spruce was found to be best for cottontails and least used by deer. Scotch pine provided both browse and shelter for deer.

As the plantations mature (30- to 40-feet) deer continue to use them but other wildlife is concentrated on the edges where more adequate cover varietypes are available.

The observations point up the need for uneven age stands for plantations in order that some areas will be coming into peak wildlife usage as others are maturing past this stage.

Who, me?

This incident occurred last year during the pheasant season on a paved highway in an Albany area county. A Game Protector and a Deputy Sheriff were behind a station wagon when a shotgun blazed out the window of the vehicle ahead. Out scrambled a man and down an embankment to retrieve the pheasant he had shot. As he clambered back up the embankment, the Protector approached and informed the gunner he'd take the bird. Out came the crying towel; the man was a prominent business man just over the State line; he couldn't afford the publicity, the fine, etc. Besides, he knew a Deputy Sheriff who lived nearby; he'd help him, if he could talk to him.

"You're sure you know this Deputy? Well?" asked the Protector.

Oh, sure, the man knew him right well; was a close friend. He'd vouch for him.

"Take a good look at my friend here," the Protector instructed the gunner. "His name is..... He's the Deputy you're talking about!"

The non-resident settled!—R. B. M.

1957
NORTHERN ZONE
LONGBOW ONLY OCT 11-24 ANY DEER
LONGBOW, RIFLE PISTOL OR SHOTGUN OCT 25 - DEC 2 BUCKS ONLY
LONGBOW, RIFLE PISTOL OR SHOTGUN DEC 3* ANY DEER
(HOURS: 7 A.M. TO 5 P.M. EACH DAY OF OPEN SEASON)
Salmon River
Pulaski
Central Square
Oneida Lake
Rome
Trenton
Utica
Middleville
Johnstown
Saratoga Springs
Granville
Hudson Falls
CENTRAL & WESTERN
LONGBOW ONLY NOV 4-17 ANY DEER
LONGBOW, SHOTGUN NOV 18 - DEC 2 BUCKS ONLY
LONGBOW, SHOTGUN DEC 3* ANY DEER
(HOURS: 9 A.M. TO 5 P.M. OPENING DAY
7 A.M. TO 5 P.M. EACH REMAINING DAY OF OPEN SEASON)
CATSKILLS & EASTERN
LONGBOW ONLY NOV 4-17 ANY DEER
LONGBOW, RIFLE PISTOL OR SHOTGUN (WITH RIFLE, PISTOL EXCLUDED IN CERTAIN COUNTIES) NOV 18 - DEC 2 BUCKS ONLY
SAME AS ABOVE DEC 3* ANY DEER
(HOURS: 7 A.M. TO 5 P.M. EACH DAY OF OPEN SEASON)
Unadilla River
Sidney
Susquehanna River
NOTE: Deer season closed during the intervening Sundays; November 24 and December 1
* Deer of either sex season on Dec 3 in all counties with a buck season (Special permit required in Putnam, Sullivan and Ulster counties only)
BEAR SEASON CLOSES ON DEC 3 IN ALL COUNTIES EXCEPT DELAWARE, GREENE, ULSTER AND SULLIVAN WHERE IT CLOSES ON DEC 18.

Big Game Hunting Map

A REVIEW of Statewide reports from the Department's game research and management field men indicate that more deer should be taken this Fall than in any year in the history of the State.

Surveys show that deer herds throughout the State are at record or near-record levels. In the Adirondacks the deer herd, favored by a succession of easy Winters with less than normal losses from Winter starvation has built to an all time high. The Catskill and Eastern Counties, too, show record high populations—especially in some Hudson River and lower Catskill counties. The deer herd in the extensive Central and Western Region is equal to last year's population levels even after last year's area-wide antlerless deer season.

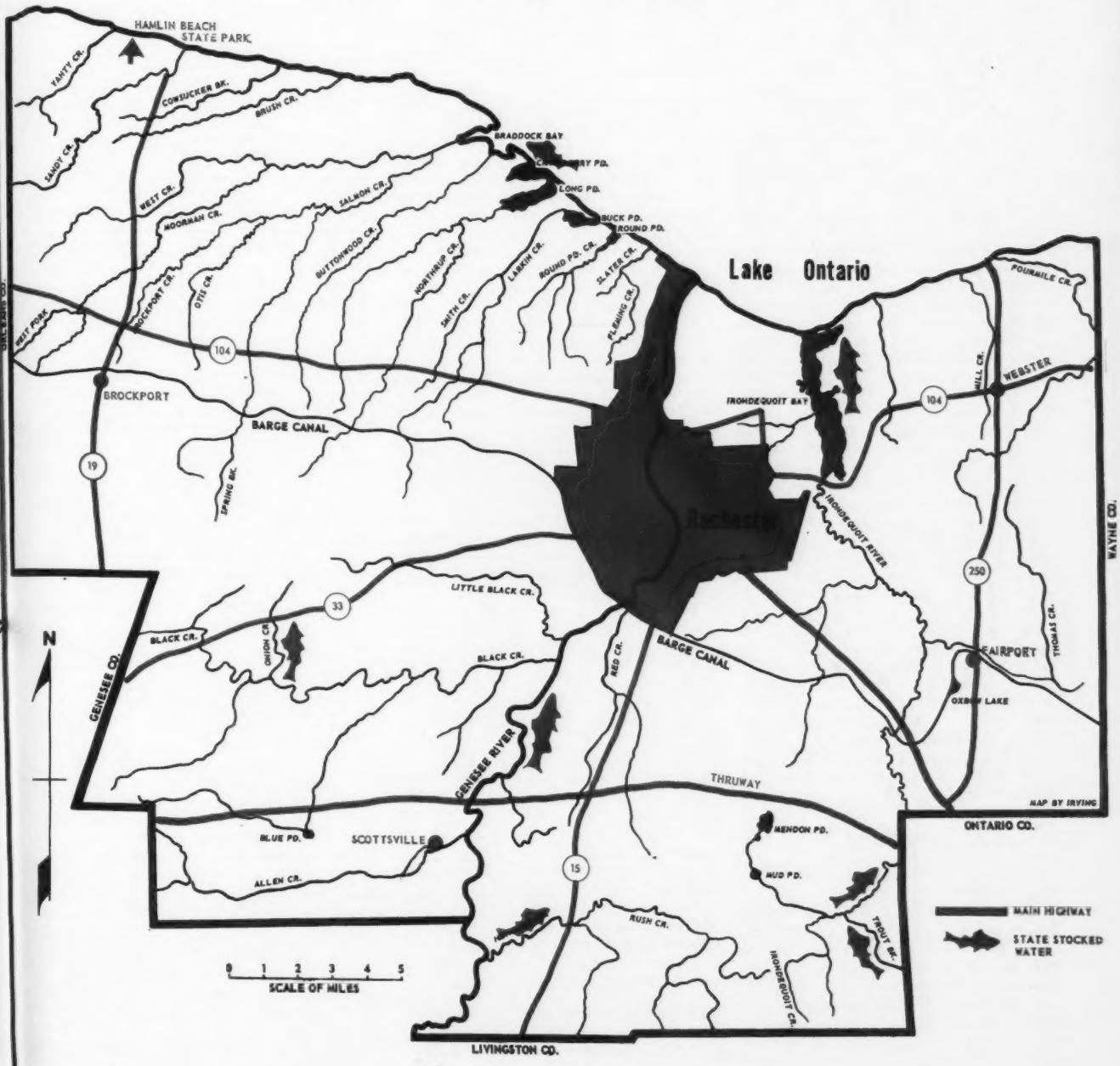
For the first time in forty years, hunters who fail to take a deer during the regular season will on December 3—the last day of the season—have an opportunity to hunt deer-of-either sex in every county of the State where a gunning season for buck deer is in effect.

In the Counties of Putnam, Ulster and Sullivan it will be necessary for licensed hunters who desire to hunt antlerless deer on December 3 to apply for by mail and secure a special permit (at a fee of 50 cents) from the County Clerk of the county in which the hunting is to be done. A Department Order has set a quota on such permits of 1,800 for Putnam, 12,500 for Sullivan and 7,800 for Ulster.

The deer season this year should give the best opportunity thus far to equalize hunting pressure, lessen crop and deer range damage and reduce the waste of deer from Winter starvation. Landowners and sportsmen of the State and their representative spokesmen as well as legislators and Department game technicians are to be complimented for developing this broadest and best of deer management measures yet devised for this valuable wildlife resource.

The bear picture looks good too. Populations are at their highest in recent years. New York's most valuable big game trophy should not be overlooked. In the Adirondacks there will be over 130 bear, live-trapped, tagged and released by Department game technicians which, if taken by hunters, will be worth a reward of $25 per tagged bear for return of the tags and certain data on the animal to help in the study of this big game animal. Among the 130 plus will be the biggest bear ever taken in New York State (see "The Bears and the Biologists," this issue).

Monroe County



N.Y.S. Conservation Department Offices

District Forester	5 E. Steuben St., Bath
District Game Manager	2130 Scottsville Rd., Scottsville
District Fisheries Manager	2130 Scottsville Rd., Scottsville
District Game Protector	2130 Scottsville Rd.. Scottsville

Farm Service Offices

Monroe Co. Soil Cons. Dist.	249 Highland Ave., Rochester
Monroe Co. Agric. Agent	249 Highland Ave., Rochester

—Roy Irving

Letters to The Editor

Forest Ranger's day—#1

Sir: Troop 76, B.S.A., of York (New York), made the popular Adirondack Fulton Chain canoe trip from July 13th through the 20th. As the Scoutmaster, I was carrying all of the Scouts' food money buttoned in my shirt pocket.

In the course of the trip, the Troop stopped for a rest at the Seventh Lake Range Station, where we met and talked to your Ranger, Howard Eagar (I'm not certain of the first name, but am the last).

To make it a short story, on departure, I left my Scout shirt hanging on a bush. It had been a hot day. By the time I discovered the loss, we had made the terrible swamp portage to Eighth and it was getting late, and getting near dinner. Some four hours later, your Ranger told us that he had found the shirt about two hours after we had left, had found the considerable sum of money in the pocket and had surmised that it represented our provision funds for the balance of the week. He was, at the time we returned, making plans to go to the portage between Seventh and Eighth lakes to try and locate us, or, at least leave word for us.

Beyond my own personal gratitude, it is my hope that you realize the value of this amiable and honest Ranger, who meets the public for you on Seventh Lake. It is true that this particular incident has caused me to write, but even if it had not occurred, I want you to know that I would have enjoyed meeting this Ranger and the one on Fourth Lake. We enjoyed all of the facilities provided by the Department, and in fact, although we're a camping Troop, we used an open site lean-to every night.

James E. Cooney, York

Forest Ranger's day—#2

Sir: On the evening of 4 August 1957, a Ranger station at Glen Island, Lake George, once again demonstrated the high caliber men that are employed in the N. Y. State Conservation Department.

In the process of lighting my stove, my hand caught on fire and after getting over to the Ranger station, Frank Leonbruno made immediate plans to have a Doctor stand by at Bolton Landing while he brought me to town in his boat. During this time, he attempted with both gentleness and persuasiveness to keep me out of a state of shock.

He then proceeded to drive me in his own car to the Doctor's office and when discovering that the Doctor had to go out on another call, he personally brought the physician back to attend my needs. After immediate treatment by the Doctor, he then attempted to drive me in his own car to Glens Falls to the nearest hospital. About half way there we got stuck in traffic and Mr. Leonbruno took advantage of a coincidence whereby an ambulance going in that direction was flagged down by Mr. Leonbruno and I was placed in it.

Even after leaving, Mr. Leonbruno still felt that his job was not complete and managed to keep my dog until other arrangements could be made.

Men such as Mr. Leonbruno are a tribute to your Department and to your State of New York.

Jack J. Sternberg, Hyattsville, Md.

• *This Summer there was much to-do and headlines in the paper when a man employed by the Conservation Department as a caretaker at one of its public campsites "flew the coop" with several hundred dollars of State funds.*

Not published in the papers are the day-to-day efforts of Department employees who spend their lives serving people; making their vacations in the Forest Preserve safe, memorable, enjoyable.

We appreciate letters like the above. They provide us with the opportunity to publish accounts that never make the headlines.—Editor.

The pest and the poet

Dear Editor:

Of magazine editors I write to but a few.
In fact it took a bit of courage to send this on to you,
But while reading your March issue I was by temptation prest
To ask of you. Whence comes this pest?
Who with soul so simon-pure,
Takes up pen so brave and sure
And boldly states—Let's have a change in time; Let's have a change in season.
Surely your Department must be shirking,
Else you'd have my system working.

Oh! These self-styled experts and their reason
Please tell me, When are they in season?
I doubt they'd be much good for pot or pan,
Or that, when dried, they could be eaten out of hand
But when stuffed and hung upon the wall,
Would not their carcasses remind us one and all
That proper conservation is the reason
For each time and place and season?

Though with some of these laws I too disagree,
I guess it's mostly 'cause they inconvenience me.
So, in closing, let me state
I think you're doin' great.
But could we—maybe—that is, I'd think it best
Just this once, have a bounty on this "Let's Have" pest?

C. T. Shattuck, Dansville

• *When we run out of critics*
And the cat won't drink more cream
We'll be watching daisies—
From underneath I mean.

—Editor

Record beaver

Dear Sir: I wonder if any other club in the State can top the beaver that took first prize in our club contest this Spring? It weighed 93¼ lbs. and was caught by Van Wight at the Rainbow Club. John E. Wilson, District Game Manager, Watertown, said he believed it was the largest ever caught in New York State. It was weighed at the B. O. Kinney Drug Store here in Gouverneur.

Henry R. White, Gouverneur

• *We passed this report along to Dr. W. J. Hamilton, Jr., Professor of Zoology, Cornell University. Here is his reply:*

"The 93¼-pound beaver that Mr. White records is undoubtedly a New York State record. I have weighed 68-pound beavers, and have an authentic record of a 74-pounder from western New York. But these are midgets compared with the Rainbow Club giant, Vernon Bailey, in his 'Beaver Habits, Beaver Control,' etc. published 35 years ago, records that old and very fat beavers occasionally weigh 100 to 110 pounds, but is not specific on this score. It would have been nice to have had the skull of this behemoth."—W. J. Hamilton, Jr.

Looking ahead

Dear Editor: In the June-July issue of THE CONSERVATIONIST the editorial makes reference to the passage of "The Wildlife Management Practices Act."

Although the access problem in this country is by no means as serious as I saw it in the United States in 1954-55, we are fully aware of the problem which is already arising. It would be greatly appreciated if you could let me have a copy of this Act.

A. Dunbavin Butcher,
Director of Fisheries and Game,
Melbourne, Australia

• *Would that we had taken this "stitch in time."—Editor*

Forest Preserve Acquisition (A Correction)

Dear Editor: In replying to the inquiry of Robert G. Drevs, August-September, 1957 issue of THE CONSERVATIONIST, page 42, about the manner in which the State acquires additional holdings in the Forest Preserve area in the Adirondack Park, our attention has been called to an error in describing the manner in which county tax-delinquent lands were acquired by the Conservation Department.

With reference to the matter of discrimination re acceptance by the State of such lands with respect to their Forest Preserve value, it was not until 1898 that any right of rejection was provided, and then only for three of the Forest Preserve counties. The number of counties in which rejection was permitted was increased from time to time but it was not until 1928 that all of the Forest Preserve counties came within the scope of the rejection privilege. Until then, and to the extent rejection was authorized, everything bid in by the State at its tax sales, whether or not suitable for Forest Preserve purposes, automatically became a part of the Forest Preserve. This "freezing," under the terms of the Constitution as of 1895, of all lands so acquired by the State probably accounts for the acquisition of the greatest number of those parcels that have since proven unsuitable for Forest Preserve purposes.

It will also be recalled that it was not until 1936 that the law gave the Conservation Department a veto on acceptance of the unredeemed lands offered by the counties. Until that time, whatever veto was available was exercised by the Comptroller.

It is clear, therefore, that the limited right of rejection, both as to the years in which rejection was permitted and as to the portions of the Forest Preserve covered, plus the inevitable errors of judgment consequent upon working with a large number of parcels in a short period of time, led to the inclusion of some parcels that have since proven undesirable.

It would be appreciated if your readers would mark my earlier reply as requiring correction to the extent here indicated.

D. G. Rankin,
Supt. Land Acquisition

Saw logs

Dear Sir: I was through the Adirondack Mountains last Summer. They looked very beautiful from the road. But my Dad, who has hunted deer in the mountains several times told me that there was some waste of good timber by leaving the logs in the woods to rot. The Conservation Department asks us to conserve our forests. I have been told that if there are four or five logs left over after the last load is loaded, they don't bother to go back and get the rest of them.

I would like to know if this problem still exists, and what we as citizens can do about it?

Richard Compton, Ovid

• *You are quite correct in your observation that logging operators very often leave merchantable saw logs in the woods for no apparent reason. There are, of course, a number of reasons which might explain their presence.*

1. They may have been covered by heavy snow and become "lost" only to come to view in the Spring, several months after the operator has terminated the job.

2. Loading equipment may have had to leave before the Spring breakup and rather than take a chance on getting such equipment mired down after a thaw, they would rather leave a few logs and get out while the roads are still frozen.

3. If only a few logs are left after the last load is removed it is perhaps cheaper to leave these in the woods rather than go to the expense of making one more trip, which in many instances may be as much as 75 to 100 miles one way for these few logs.

This problem still exists and there is little we as a Conservation Department or you as a citizen can do about it. As long as the operator has paid for the material he cuts it is his prerogative to do with it as he wishes.

We agree with you, however, that it is not in the best interests of Conservation to leave good sound saw logs in the woods to rot.—E. H. Huber, Supervising Forester

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Lower Sargent

Dear Editor: As a counselor on the overnight hike at Raquette Lake conservation camp, I viewed with interest the reclamation of Lower Sargent Pond. The dose of rotenone applied in July of 1956 supposedly killed every fish in the pond. And the legal trout stocked this Summer provided the boys with plenty of fun (and good eating).

However, during the Summer, two large suckers were found dead on the shore. A seine revealed some 1- to 3-inch fish as young suckers.

How did the suckers survive the rotenone? And what effect will suckers have on the trout, if any?

Enclosed find two photographs, of a large sucker and the small ones. Also find a scale sample from one of the large suckers.

Larry Pringle, Honeoye Falls

• *It is good to hear that Lower Sargent Pond provided remunerative brook trout fishing during 1957, the first year following reclamation. Not so good to hear is the fact that the common or white sucker escaped complete eradication.*

Unfortunately our experience in reclamation reveals that certain native species of fish such as minnows, suckers and bullheads cannot always be completely eliminated, even though at time of reclamation they are killed in large numbers. Suckers are more resistant to given concentrations of rotenone than perch or bass. This fact coupled with the possibility of their remaining in deep spring fed areas probably accounts for their survival. As the white sucker is a native associate of the brook trout, they should not have too serious effect upon the trout fishery in Lower Sargent, although we would prefer them as an outsider looking up at the barrier dam.

The scale sample that you enclosed taken from the large sucker can be read as a specimen in its eighth growing season. Growth this year has been excellent, better than previous years and undoubtedly reflects the lack of competition for food due to the low density of this species. The picture of the young-of-year suckers indicates that enough adult suckers survived reclamation for successful spawning.

Your interest in sending us this information on Lower Sargent Pond is greatly appreciated.—Robert G. Zilliox, District Fisheries Manager, Adirondack Fisheries District

Mrs. Winkelstein's tulips

Dear Sirs: In your June-July issue, Mrs. W. Winkelstein, Jr. complains about the squirrel nuisance which is quite a proposition to keep them from digging up and eating tulip bulbs, especially.

She would have better success if she put the combination of Napthalene balls and flakes 2 to 4 inches in the ground. Two inches for crocus and 3 to 4 for tulips, hyacinths, or any other bulbs that attract the squirrels.

And *do not* plant too close to the bulbs; probably 2 to 3 inches. As for eating the flowers when they start to form, we give up unless she uses a good quality, fine mesh wire about 12 to 18 inches high around the beds.

R. R. Akins, Ocean Grove, N. J.

• *We doubt, after watching the "trapeze" artistry of squirrels, that 18 inches of fine-mesh wire would pose much of a hurdle.—Editor*

Catbirds

Dear Mr. Seagears: Thomas Nuttall in the "Land Birds" volume of his "Manual of Ornithology," Cambridge, 1832, p. 335, says as follows about catbirds' nests: "I have frequently found in the external coat of the nest, the cast off skins of *snakes*, more rarely bits of newspapers, wood shavings, strings and bassmat strips." Several others, Forbush, Eaton, Chapman, Coves, Bent and Barrows say nothing about snake skins in the nest of the catbird, but all mention them as being in the nest of the crested flycatcher.

George L. Slate, Professor of Pomology, N.Y.S. Agricultural Experiment Sta., Geneva

More on flying the mountains

Sir: I read with interest Mr. Snyder's letter pertaining to Adirondack aircraft. As the owner of a private float 'plane which I use for my personal hunting, fishing and sightseeing, I would like to present my personal views from the other side of the fence.

I agree with Mr. Snyder on one point, the "Air Age" is definitely here. I cannot see trying to force general aviation back into the dark ages. Progress is a continuing thing and though some would like to stand in its way it cannot be done. I cannot speak for the boys flying commercially in the Adirondacks but it seems as though the attitude of "cut them down to the bone but keep them around in case we need them" is not a fair attitude no matter how you approach the subject.

I have been walking in the Adirondacks for more than 20 years and have enjoyed every minute of it. Although I have been flying the mountains a relatively few years, I have enjoyed it even more. I cannot see what harm a float 'plane does in the mountains. Granted it does make a few ponds easily accessible that are quite far from the road but very few people would walk there anyway.

In general I would say float 'planes are a valuable and necessary item to have around. Certainly the Conservation Department has found them invaluable. It allows many people, including our senior citizens, who are not able to take long hikes with packs to enjoy the backwoods areas. The mountains are a beautiful sight seeing trip, an entirely different conception from driving through. The over-populated deer areas can be hunted using the float 'plane as a means of transportation. Areas that would not be readily reached by foot. If Mr. Snyder and myself were sitting on the same shore having a smoke, I wonder if he would drag a deer, say, 20 miles to his car rather than ask me to fly it out. Chances are he would never be that far in anyway. Noise is a debatable subject. What noise is irritating to some is not even noticed by others. Let's take Mr. Snyder's view point and say we closed the Park to private aircraft. I certainly do not think this fair. If we were breaking any rules or regulations pertaining to fishing, hunting, or the use of State land I could go along with it but just what special harm are we doing? As I reread Mr. Snyder's letter I would get the impression that there are thousands of 'planes crawling over the Adirondack Park like ants. If the truth were known, I'm sure you'd be surprised at just how few 'planes are used. In all the hours I have spent flying the mountains I have never seen more than two or three 'planes on any single trip and they have been many miles apart. To hop on Mr. Snyder's side of the fence for a moment, there are hot rod pilots that should be curbed the same as there are in thousands of automobiles and speed boats. Any type of careless or hot rod flying is a mark against general aviation and you'll find the CAA has some definite restrictions on this subject.

State water is the only legal place float 'plane pilots like me can land. I think it very unfair to even suggest restrictions that would prohibit our using State water. There are literally thousands of lakes and ponds that float 'planes cannot land or takeoff from. I can see no logical reason why we should be denied the ones large enough for us to use.

R. W. Rehbaum, Duanesburg

The pine sawfly

Dear Sir: Recently I was visiting in a Summer community known as Beachwood Lake near Peekskill, New York. While there I noticed a tree (I think it was a spruce) that was infested with about 25,000 dark green smooth skin caterpillars about one inch long and ⅛ inch thick. They were in clusters of 50 to 250 on the branches and were rising up and down in waves, as though keeping time to music.

I sprayed them with a household insecticide containing DDT which stopped their movement but which didn't break their grip on the branches.

I would appreciate it if you would identify them for me. The belly was a light green; the back (if I'm not mistaken) had broad dark green stripes and narrow light green stripes running the length.

Ira S. Itzkowitz, Bronx

• *It is quite possible that the tree you observed being attacked by green worms was a red pine rather than a spruce tree. Our reason for suggesting a red pine is that your description fits a species of pine sawfly that is quite common in Westchester, Putnam and Rockland counties in New York also, in Connecticut, New Jersey, Michigan, Ohio, Wisconsin and Canada. The great number of caterpillars attacking a single tree is another indication that it is the pine sawfly* Neodiprion sertifer.

N. sertifer *was apparently introduced from Europe prior to* 1925. *Reports from Europe indicate that it is a serious defoliator of pine and outbreaks occur at irregular intervals in many countries on the Continent. The favored food plants in the United States include red, Scotch, Japanese red, Jack, Swiss mountain and mugho pines. The larvae are gregarious and feed on the mature foliage, at first feeding along the edges of individual needles and later devouring all the needles on one branch before migrating to another. This insect has one generation a year. The Winter is passed in the egg stage in pine needles. The eggs hatch late in April or early May. The larvae feed on the old needles first and become full grown early in June. Occasionally some of the cocoons are spun on the twigs of the food plant but generally they are spun in the duff under the trees. The adults (sawflies) emerge early in the Fall to deposit their eggs in slits in the needles.*

To control this insect, use a wettable DDT (50% DDT) at the rate of one to one and one-half pounds per 100 *gallons of water. For small quantities of spray solution use one and one-half to three teaspoonsful of wettable DDT powder to one gallon of water. Spray the trees as soon as the insects start feeding in the Spring.—W. E. Smith, Forest Pest Control Foreman*

Hallowe'en

Dear Editor: I thought you'd be interested in a picture of a "float" that our neighborhood had in our local Hallowe'en parade last Fall. The theme was noted on the front of the wagon, by a large poster with Smokey Bear on it and the words "Prevent Forest Fires."

The children were dressed as the various animals of the forest. Notice in the background our "Smokey Bear" and next to him, Forest Ranger O'Neill.

We won the prize and the children also received ribbons.

Mrs. Charles O'Neill, Liberty

Sick coyotes

Dear Sir: With reference to the ailing coyote reported in April-May, '57 issue, it may be of interest to you and to John E. Wilson, District Game Manager, an experience I had with a mangy coyote many years ago; I'd say around 1906.

A friend of mine, an officer in Colo. Nat. Guard, loaned me one of the, then new, .30-06 Springfield rifles. One day I ran into a coyote, on our ranch in northern Colorado, and promptly proceeded to fire several shots at it; all misses, I didn't know, or at least realize, that the Springfield was sighted to strike point of aim at around 400 yards; thus I was overshooting. Yet the coyote stood there, and finally I hurried back to the house to get another rifle. This one I had sighted in myself—a .32-40 Stevens, and one shot laid the animal low.

This poor thing was in a sickening condition. It was almost too weak to walk and its body was covered with the sarcoptic scabs. As I recall the only hair visible was about the head, that is ears and neck and a small tuft on the ratlike tail. Since that time I have seen others affected but nothing in any way comparable with the to-be-pitied animal that I so luckily put out of its misery.

Coyotes are very interesting animals and while they do do a certain amount of damage, yet after many years observing them I can not go along with those humans who seek their complete elimination.

Allyn H. Tedmon, Littleton, Colo.

• *Fortunately, we haven't heard that this condition is too prevalent here. Although I don't believe anyone is "carrying the torch" for coyotes in New York, I am equally sure that they don't wish them all to meet their demise in this miserable fashion.—Editor*

Healthy clams

Gentlemen: On several occasions when opening hardshell round clams (littlenecks and cherrystones) I noticed that some of them were milky in part and rather than take a chance I disposed of them.

Does the milky portion mean they are diseased, or have they been injured or does it have no significance at all?

Eugene F. Dumesnil, Sag Harbor

• *Since your letter was dated August 20, I assume you noticed this condition during the latter part of July and first of August. This information would indicate that the condition noted by you would be a result of spawning activities of the clam (the hard clam,* Venus mercenaria*).*

During the Summer months starting in May, the gonads of the clam are full of ova and sperm, the ova being associated with the female clam and the sperm with the male clam. If the gonads are cut or punctured as might happen occasionally in the shucking process, one would notice a thin, milky substance at the point of injury. This milky appearing liquid is a combination of gonad contents and blood. This is a normal condition at that season of the year and not indicative of disease, nor should the clams be considered unfit for food.—Harold F. Udell, Marine Fisheries Sanitarian

Lake Peconic clams

Dear Sir: We have a house on Lake Peconic in Calverton, L. I. about 4 miles west of Riverhead. I found a great number of black hard shell clams in these waters. What good are they if any? I have been digging these clams up and throwing them away. They are covered with leeches. If there is any information you can give me in reference to these waters and clams I would greatly appreciate it. I understand these waters are stocked by the State with pickerel and bass.

Mrs. Charles Sharbac, Bellerose, L. I.

• *Peconic Lake was formed by the construction of a dam across the Peconic River upstream from the Village of Riverhead in Suffolk County. A second dam at Riverhead confines the tidal waters to the downstream portion of Peconic River. Thus, Peconic Lake is a part of the fresh-water section of the River. The black clams referred to in the inquiry are probably fresh-water clams of the species* Anodonta. *The outside shell of this clam has a dark brown appearance and the inside is commonly referred to as mother-of-pearl. In fact, the brownish coating on the outside may be removed by scraping and the entire shell may be polished to a high luster. The clam meats have no value as food; however, one time, shells of this type were used for the manufacture of buttons. The presence of leeches (probably* Clepsine*) may be associated with the type of bottom in which the clams are found. Mud and clay mixtures would cause the shells to become darker and also to contain greater numbers of invertebrates such as leeches and worms. Duck farms located on the northerly shores of Peconic Lake contribute to this type of bottom sediments.*

In 1956, a few salvaged bass were placed in Peconic Lake; however, these waters are not suitable for trout and, therefore, this species of fish was not released in these waters. Peconic Lake was not stocked in 1957.—Harold F. Udell

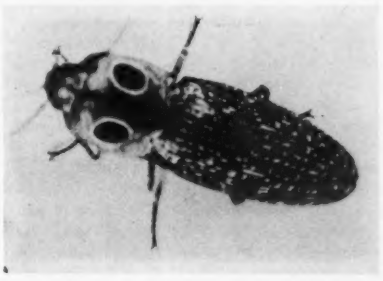
The poor people

Dear Editor: I have a story I think you will enjoy. A couple of campsites up from us at Fish Creek last week, one of the campers swears that she overheard one wealthy woman say to another as they were sightseeing behind their chauffeur through Fish Creek camps:

"Isn't it wonderful what New York State does for its poor?"

Perhaps I enjoyed it especially because I'm a teacher and rich in everything but money.

Albert E. Walker, Rochester



The eyed elater

Dear Editor: Contents in box "One bug," found in rotten oak stump on Wellesley Island, St. Lawrence River. What is it?

William C. Johnson, Jr., Tupper Lake

• *We have the "pet" that you dug out of the rotten oak stump on Wellesley Island and sent to us for identification. The critter is a beetle and goes by the common name of the eyed elater. It is a member of a large group of insects known as click beetles, so named from their habit of suddenly bending their bodies so that the two segments strike each other with a sharp 'snap.' The larvae, or worm stage, live in decaying wood, often old apple trees, and are carnivorous.*

The larval form of some of the click beetles are the wire worms that cause much damage to cultivated crops.

Your beetle happens to be the largest member of the click beetle family.

You will be happy to know perhaps that one of the men in the Department adopted the beetle, which was still alive and in good spirits in its matchbox cage, and took it home to release in the hollow of an old dead apple tree on his property. I am sure that it will be very happy. Quite a trip from Wellesley Island to Rensselaer County for a beetle, what?—Editor

Ducks at home and at sea

Dear Sir: Somewhere in your magazine I read an answer to a letter requesting good bear hunting grounds. I am not a bear hunter. But I would appreciate your advising me of a couple of good goose shooting spots within the 200-mile radius of N.Y.C.

I know about Mecox Bay in the Town of Southampton. Unfortunately, the local regulations plus my refusal to pay guide fees leave me standing on the shore with hungry eyes while the geese fly about in all of their majesty. I have access to a boat but I prefer shore or marsh shooting with waders.

Also, could you tell me about the law governing ocean shooting within one mile off shore? Would I be governed by the laws of the town or the U.S. Coast Guard? You will of course agree that it is better to go afield with the information rather than to learn it from a Judge. Which reminds me: What about the Corps of Engineers and hunting on the Hudson River?

John J. Speziali, New York City

• *Neither the Coast Guard nor the Corps of Army Engineers have anything whatsoever to do with restrictions or the setting of regulations relative to hunting migratory waterfowl. The Federal and State regulations apply.*

I know of no law prohibiting shooting within one mile of shore. However, the Town of Southampton does have an ordinance that prohibits a non-resident of the Town from hunting on Town-owned lands, unless accompanied by a guide.

The lands under Mecox Bay are owned by the Town of Southampton.

As to private lands, and waters of the ocean, there the Town ordinance does not apply.—Geo. Odell, District Game Protector, New York Division

Bob White

The Letters to the Editor department might be interested in this short "bulletin" which was mailed last Spring to more than 100 residents of Lloyd Neck on the north shore of Long Island:

"Dear Friends and Neighbors:

"An effort is being made to re-establish the Bob-White quail on Lloyd Neck, an ideal natural habitat for this species.

"Preliminary tests have been successful. Of two coveys released, last Spring and Fall respectively, a band of 20 birds has remained intact, alert and strong on foot and on wing, fully capable of survival.

"In April, the covey will disperse to extend the range in pairs, preparatory to propagation. Then, they become more vulnerable to predation from many animals, especially the domestic cat, particularly before the young birds can take wing.

"It is earnestly requested that you join in this experiment by giving these birds all possible protection. You will be bountifully rewarded by their song and friendly presence for years to come. Quail like to be near human dwellings."

It is hoped that this restocking experiment will stimulate interest in the protection of this friendly, gallinaceous bird with the beautiful song, and a love for the proximity of human habitations.

George Fonde, M.D., Manhasset

Mistaken kindness

Dear Editor: I am enclosing a picture of deer, illegally held in captivity in a barn in Allegany County. The farmer had injured the deer three years ago while mowing hay and had brought it in to nurse it back to health. Ever since then the animal had been chained up as you see it,

Protector Maddren and I asked the farmer if he would think of keeping one of his young stock in this condition, chained to the barn wall? He had no comment except that he kept him because the children liked him.

The deer had to be destroyed—it was in too poor condition for anything else, and the man was fined for its illegal possession, but somehow I thought that a few weeks standing in the corner with that chain around his neck would have impressed him much more.

We believe that the education campaign carried on by the Department in recent years to leave wild animals *in* the wild has had a great effect in cutting down on such cases as this.

R. J. Hannon,
Asst. Dist. Game Protector, Olean Div.

• *We certainly hope so.—Editor*

Spearing in the Delaware

Dear Sir: Is spearing for eels allowed in the Delaware River between the States of Pennsylvania and New York? According to the new 1957-1958 N.Y. State Fishing Guide, no spearing is allowed in waters inhabited by trout.

On page 10, par. 3, trout is mentioned: Minimum length 10", 5 per person per day.

Spearing for eels at night has always been a very big sport in this body of water. Is this legal now or isn't it?

Cornelius P. Kraay, Hankins

• *Spearing is carried on in New York State under authority of Section 265 of the Conservation Law which authorizes an annual Spearing Order to be drawn. In the waters and in the season specified by this Order, certain species of fish including eels may be speared. On the New York side of the Delaware River spearing of eels is permitted.*

The controversial point involved in this matter concerns classification of the Delaware River as non-trout water. We are aware that some trout are taken annually in this river. However, during the Summer the trout occupy relatively limited areas of spring holes and at the mouths of tributary streams. The principal fisheries of this river are for warm-water species primarily smallmouth bass and pikeperch. At this time, therefore, the Delaware River is classified as non-trout water although major areas of both its main branches are trout water.

For 1957, regulations on spearing by the State of Pennsylvania differ considerably from those in New York State. If you are interested in spearing on the Pennsylvania side of the Delaware River, I would suggest that you contact authorities of the Pennsylvania Conservation Department for rules and regulations applying there.

Changes in regulations for spearing in the Delaware River are under consideration by both Pennsylvania and New York for the season of 1958 with the objective of making spearing regulations uniform on both sides of the river.—C. W. Greene, Chief, Bureau of Fish

Supplement on bait

Dear Editor: My husband and I are both avid readers of THE CONSERVATIONIST and were especially pleased with Jean H. Glick's article, "Bait In Your Basement," in the June-July issue. We've been thinking of raising worms for quite some time now but couldn't figure out where to begin until the above mentioned article. It was somewhat enlightening but there are a few questions we'd like answered before going ahead with our project:

1. How many worms are needed to start a worm bed that will yield 3,000 to 5,000 worms in a year's time?
2. If worms are kept in a wooden container treated with creosote or some wood preservative, would they be as good as if kept in a metal container?
3. Can we cut down on size of containers —for instance, a 12" by 4" deep—using ½ of what your article stated?
4. What do you consider loam soil and where in our area can it be obtained?
5. How about damp wood shavings mixed with loam soil—is it of benefit?
6. Could we use bacon grease or any other grease outside of beef suet or lard and get the same results?

Mrs. Leon L. Schwenn, Syracuse

• *As to how many worms are needed to start a worm bed a good "rule of thumb" is 20 worms per square foot of space. The amount yielded at the end of the year will, of course, depend on conditions achieved during that year. With ideal conditions you will reach the 3-5,000 figure.*

If worms are kept in a wooden container I would not advise treating it with creosote since this may have a definite effect on the life of the worm. Just be sure to provide proper drainage to prevent the wood from rotting. This can be done by drilling small holes in the bottom of the box and covering them with fine-mesh screen wire (to prevent the worms from escaping). The boxes should then be elevated approximately 6 inches and small cans placed under the holes to catch any excess water. Drainage can also be improved by placing a layer of alfalfa or other hay in the bottom. Not only does it keep the culture from sticking to the bottom but it provides food for the worms. The size of the containers would make very little difference; only the ultimate yield would be affected. Whatever you use do be sure to provide a cover as mice and rats find worms very much to their liking A hinged screen cover is ideal.

A loam soil is one made up greatly of decayed leaves and is, therefore, very loose. Soil taken from the woods would usually be loamy. I, personally, do not feel that the wood shavings you mentioned would be of benefit as an additive since they contain no food value for the worms and would not provide as ideal a place for the babies as leaves or straw, however I have never tried shavings and cannot give a definite answer (let me know if it works!).

Yes, you can use bacon grease or most any fryings. Experience will tell you what "diet" is best. Raising worms can be compared to the first family dog—you haven't a clue what or how to feed it, but by the time the first puppies arrive you are an expert! Good luck on your venture.—Jean H. Glick, Central Islip

Bird bands

Sir: On December 1st last year I found a large bird dead in a body of water in Albany County. The bird apparently had been shot by thoughtless hunters. His body was partially eaten away by predators.

It was an ungainly, heavy gull-like bird; mostly white with a white head and breast. The wings were large and grayish; bill rather long, legs short, feet webbed

The bird carried a leg band #556-83193 which I am enclosing.

Anonymous

• *The following information was received on band 556-83193: Herring gull, local young, banded on Scotch Bonnet Island, Prince Edward Co. Ontario, Canada, July 5, 1956 by Herbert H. Southam.*

Waterfowl banding is done in co-operation with the U.S. Fish and Wildlife Service, Washington, D. C. In order to make the records of recovered bands complete they request the species, sex and age (if possible), band number, location, date, method of recovery, name and address of person recovering the band.

They are particularly interested in band returns as only one or two bands are returned for every ten bands used. As it costs nearly $1 each to trap and band wild ducks, each band returned is worth from $5 to $10. Therefore, a report is sent to each person making a return giving the banding information and thanking him for sending in the band.—Donald Schierbaum, Game Research Investigator

Ed. note: It is not our practice to publish anonymous letters. We make an exception here in the interest of underlining the importance of sending in accurate information on any banded birds. The Department's protectors aren't out to prosecute the guiltless.

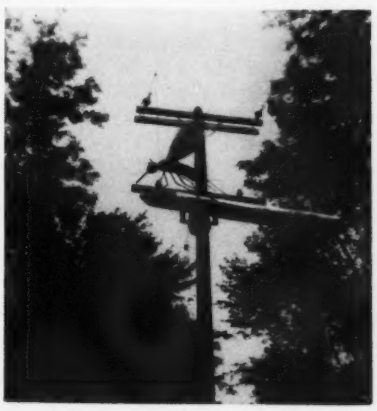
A minor problem

Sir: Now that the hunting season is again coming I have a worry on my mind. Last season after completing the hunting training program I purchased my small game license for which I had to give to the person the white slip of paper that signified that I had completed the course. However, when I purchased my big game permit in another store I was asked for the white slip. I showed my small game license and the yellow card given with the white one. The person insisted that I needed that white slip to show the Game Warden when he came. I told him and also my father said that in order for me to have gotten my small game permit that I had to give it to that person. Well, finally I had to give him my yellow card.

I will be 17 when I will want to purchase my 1957 permits and what I would like to know is: Are my 1956 licenses enough proof to get my new licenses (as my yellow card was never returned to me)? I don't think that I should be required to repeat the course, however, I do not know. Thank you very much for your help which I need.

Louis Meier, Lynbrook

• *Your 1956 licenses will be accepted as proof.—Editor*



Monster

Dear Sir: I think perhaps you may be interested in the enclosed snapshot.

It certainly looks like one of the largest mosquitos to be found in the Adirondacks.

Actually it is made of wrought iron and plexiglass by Mr. Ernest T. Darvoe of Trenton Falls, New York, and is at the entrance to his camp at Mountain Home.

Emma D. MacAllister, Bel Air, Md.

• *This is the size of mosquito that's been biting me for years. Thanks for the evidence.—Editor*

Garden aid

Dear Sir: THE CONSERVATIONIST I enjoy and am refreshed during the Winter months with the thought of the woods and getting back to them in the Spring. I wonder if any of your readers would be amused or interested in some of my observations? I am a lover of the woods and the lives they contain; although I enjoy hunting too.

I think maybe the Conservation Department took away my 1955 "garden aid" —or maybe a hunter. The bear in my section of the Adirondacks have left and I missed one handy one that helped turn my compost pile. By accident that year I tossed a handful of peppermints the mice had left, into the compost pile. Several days later I found the pile neatly churned up, not scattered.

Early Fall, the pile needed turning again so for fun I pushed deep into the compost more peppermints. It worked. A few days later, the pile was churned, but deep—a real good job! The previous Fall he had not been so thoughtful. He tore off the platform that covered our garbage hole and scattered the boards until the hole was large enough for him to climb in.

He had two paths across our property. We saw him several times in early afternoon. He was a large black bear with brown spots over each eye. I thought what a rug for Grandma to hand down but it was not hunting season. When the apples ripened and fell I got within 15 feet of him but come hunting time he was smart. He knew when the leaves fell it meant trouble ahead. I did not see him last Spring and Summer. Maybe someone else got the bear rug the Fall of '55.

Mrs. Norman Donald, Staten Island

• *There'll be another—if the peppermints hold out.—Editor*

Blowfish roe

Dear Sir: My family were enjoying blowfish roe so very much when two different people informed us that they had recently read an article advising against eating it. The article said that at certain times of the year, blowfish roe is poisonous.

Can you give me any information on this matter?

Flora S. Luce, Cutchoque

• *The blowfish,* Spherioides maculatus, *is a member of the family tetraodontidae. The ovaries of fishes of this family often contain a poison which is virulent, particularly in tropical species. During the past fifteen years the blowfish has become a popular food fish and is taken by both the commercial and recreational fisheries. In commercial practice, the fish is skinned and the whole insides, including the roe, discarded. However, in view of the fact that the fish are being taken in the sport fishery with a distinct possibility that the roe might be utilized by anglers, the roe was tested by Dr. W. H. Yudkin of the Bingham Oceanographic Laboratory of Yale University. A report of Dr. Yudkin's findings was published in 1945. According to Dr. Yudkin, the very ripe roe were toxic. It contained material that tended to inhibit the beating of the heart. However, preliminary experiments on some mice and a dog did not cause death. The dog showed symptoms of being sick after eating the ripe roe, but recovered within several hours. As far as I know, no additional work has been done.*

On the basis of this work, and until further research is done, as a precautionary measure I would suggest that if the puffer roe must be eaten, only the small, immature roe be used. In this state the eggs are small and of an intense yellow color. The roe which is approaching ripeness usually is larger and the eggs are of a light yellow color, somewhat translucent in appearance. Because the layman may find some difficulty in determining which roe is green and which is ripe, and in view of the fact that various individuals may react differently to the toxic effect of the ripe roe, it might be advisable as a precautionary measure not to eat blowfish roe.—Alfred Perlmutter, Sr. Aquatic Biologist (Marine)

Club project

Gentlemen: Submitted herewith is a list of our entire membership (26) to be enrolled as subscribers to THE CONSERVATIONIST. Please note that two of the members are renewals.

Enclosed is a check in the amount of $52 covering the cost of one-year subscriptions.

John Ranze, Secretary

• *Our sincere thanks. We can't argue with this as a club project.—Editor*

Sabo

Dear Sirs: I do not know how I missed your skunk trap picture (and letter from Mr. Jorgensen) on page 44 of your April-May, 1956 issue, but I surely wish I could buy some more of these traps which are so wonderful for catching and instantly killing woodchucks that dig under wire and into pheasant pens.

I have used these traps for many years but now only have one left. I will indeed appreciate it if you can tell me where I can buy some. I originally bought mine through our local hardware dealer but he does not remember his supplier. I assure you that any help you can give me will be very greatly appreciated.

C. Beverly Davison,
Pheasant Farm, Millbrook

• *At the present time I don't know of anyone still making the Sabo trap. However, the address of the company was, Sabo Trap Manufacturing Co., 3108 West 25th Street, Cleveland, Ohio. An inquiry there might give you a lead to a manufacturer or a distributor who might have a supply.—Ed.*

Credits

1st cover, pgs. 2, 17, 20, 21, 23, 24, 25, 31, 40, H. Wayne Trimm; 2d, 3d covers, Clayt Seagears; 4, 5, Nick Drahos, Trimm; 6, Cattaraugus SCS; 8, 9, 11, Roy Irving; 10, 11, Am. Aerial Survey Co., SCS, BSA; 12, 13, Trimm, A. B. Hatch; 14, 15, D. G. Allen, Drahos, John Schempp, Doug Finch; 18, Drahos, Trimm, Seagears; 19, USGS; 22, K. V. Gardner, Trimm; 26, Drahos; 27, Earl McGuirk; 28, Roland Walker; 34, Cornell Coll. Agr.; 35, Rey Doerer; 36, Wm. Krum, Trimm; 37, Harold Cannell; 38, R. A. Berry; 39; Harry Best; 4th cover, Forest, Fish & Game Comm. Reports.

Life in a Post Hole

ONE Spring, some men got together to build a camp on land leased from a lumber company in a remote, wild part of the Adirondacks.

They flew in their materials, using a float 'plane with enough engine to get in and out of a nearby pond. They even put up a 12-foot deer-proof fence which enclosed the cabin and a quarter-acre. On this plot they actually scrubbed out a garden to provide fresh vegetables for Summer vacations and potatoes for Fall deer hunting.

It was quite a project. They had enough wire to fence a larger piece. But post holes proved extremely tough to dig.

"I wouldn't dig another if my life depended on it," one man said. But they kidded him into digging one extra hole.

One November night the following year a doe fell in the unused hole and broke her leg.

Broken legs are fairly common among deer but they usually knit well. The animal merely limits 3-legged activity as much as possible. Anyway it so happened that this mishap occurred just before the first of her three normal mating periods, each of which lasts about a day and a night. A lunar cycle of 28 days separates these three estrus phases. Anyway, the doe was in sanctuary this first time in late November. The second time—in December—she was not bred again by accident. But when her third and final chance for productivity came in January, Nature and a 3-year-old buck did not pass her by.

She produced twin fawns 200 days later — the third week of August. So one day in mid-September when the trio walked along a runway, the late fawns were still small and bright with spots. Their chances of Winter survival were not worth two cents in the Adirondacks.

One youngster lagged a bit behind, interested in a big gray squirrel which fussed almost under foot among the early-fallen beech nuts.

Now gray squirrels are not common in the Adirondacks but they aren't as rare as the pine marten, that quick yellow-chested American sable which has no trouble knocking off even the nimble red squirrel in the cone trees. One of these agile creatures saw the squirrel, bounced over a log and instantly had it by the neck. The fawn jumped when it saw the sable, whirled and instinctively brought its tiny hooves down on the animal. Surprised and somewhat stunned, it dropped its victim and the squirrel dashed off over a ledge.

Nature's pulse ebbs and swells to the impulses of fantastically intricate chains of coincidence. This chain did not end this September day.

Of course the squirrel had been extremely frightened and its flight had taken it across a stream well beyond its home range. It remained in this new territory, tunneling a sufficiently warm Winter retreat in the rotten duff of the stump. For two months it stayed there, until the December day when a bear began to enlarge the cavity for its Winter hibernation chamber.

The bear could have caught the gray squirrel but it didn't bother. Just prior to hibernation its stomach had contracted to the size of an apple and it couldn't eat anyway. But the squirrel didn't know. Off it scrambled to a better hole—down off the mountain to the valley. There the cabin waited and so did a mattress, hung beyond the jumping capacity of a deer mouse but not a gray squirrel.

On sunny days, the squirrel would dash through the deepening snows over the garden, then tunnel down to salvage Summer's seeds.

A coyote, off on one leg of a long hunting circle, saw the squirrel whisk into its snow tunnel early one January morning. Sight of a bushy tail strangely excites most members of the canine tribe —and the coyote sneaked up to the fence. He was frustrated only a moment. Quickly he dug down to the bottom of the chicken wire, worked his head under and heaved. The whole frost-brittle section tore away from the post as the squirrel scampered to his secret hole in the cabin.

Later, a 20-pound porcupine, having satisfied its hunger for a week or so in a towering white pine, plowed his wide belly through the snow until he came out on the coyote's tracks. And down this path of less resistance he shuffled straight through the gaping fence to the cabin door.

He spent the day ravenously chewing the hand-salt from the latch and knob. Finally they fell off. Next he ate through the door and it sagged inward. Even the trap door to the cold cellar fell, easy victim of his paired chisels. But he had less relish for the binned piles of garden stuff—the spuds, turnips and beets in the cellar than for the tinned stuff upstairs. Soon the floor and even the snow around the cabin was a stained mess of gummy tracks.

Meantime, the two late fawns were having tough sledding. Deep snows with yielding crusts had forced the herd into their traditional wintering area. In this yard the food supplies already had been limited critically by generations of overbrowsing and even that was beyond reach of the fawns. For some time, they had been living on their stores of body fat supplemented by what little they could paw up alongside the maze of beaten deer paths.

Then one day it thawed hard. Then the weather zeroed and the fawns were able to move their forty pounds upon the crust. They worked only the fringe of the yard that day because strange instinct was a strong magnet to the place. But when that night they heard the wild, far-reaching cry of the coyote, they began to move uneasily upwind. And when the cry persisted, they loped through a notch into new territory.

At dawn, with the coyote silent, they went through the hole in the fence. Curiosity nudged them to the open door and the trail of molasses and salty stuff lured them in.

Goat-like traits made it easy to reach the potato bins. And they foraged on the garden raspberry shoots and the buds inside the fence. When the critical starvation period of early March arrived, the fawns were fat and fine. And then an unusually early Spring visited the North Country that year and starvation among the whole deer herd was negligible.

The bear quit his hibernation quarters the first of April. He ate quantities of vegetation at first. Then came the Big Hunger. He began search for the usual carcasses of Winter-killed deer. But there were none. If the twin fawns had died, it would have satisfied his craving. But he had to travel and he knew where to go.

The bear soon wrecked the cabin. Window sashes were broken. The stove was battered and mattresses were ripped to shreds. Soot, flour and canned stuff smeared all. Carnage was unbelievable.

On Decoration Day one of the men flew himself into camp to spend a week fishing. He saw the wreckage and he flew straight back home.

That night he woke up helpless with inner pain. Soon he was unconscious. But a hospital was handy and quick surgery saved his life.

He was the post hole digger.

—CLAYT SEAGEARS

"The fawn jumped when it saw the sable . . ."

SHAGBARK HICKORY

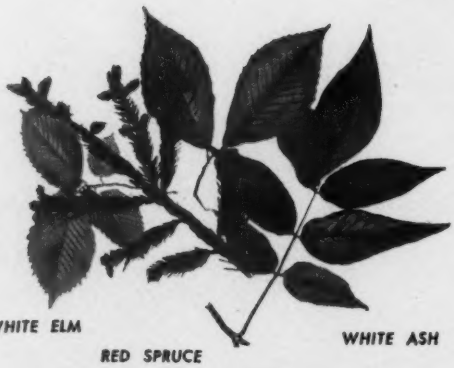
FLOWERING DOGWOOD

BASSWOOD

WHITE CEDAR

HARD MAPLE

SASSAFRAS



WHITE ELM

RED SPRUCE

BEECH

WHITE ASH

WHITE MAPLE

TULIP TREE

SCARLET OAK

SWEET GUM

RED OAK

CHESTNUT

RED MAPLE

TAMARACK

WHITE PINE

ASPEN

BALSAM FIR

WHITE WILLOW